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ART. I.—PSYCHOMETRY.

IN the autumn of 1842, in the city of New York, I had the pleasure of ascertaining and proving, by experiment, the existence of a wonderful power in the constitution of man, the discovery and use of which at once opens before us a wide realm of knowledge. In that single discovery, lay the germ of a science of lofty pretensions, and so wonderful in its facts as to be difficult of belief, if not utterly incredible, to the greater portion of our scientific men. Yet, high as its pretensions are, they are demonstrable in the most rigid manner, and, incredulous as the public may be, it cannot be long ere the truth of my assertions shall be familiarly known in Europe and America.

I have made but little effort to bring this matter before the public. Wonderful as it is, and well adapted to exciting an intense interest, I have quietly prosecuted my experiments for the last six years, without endeavoring to arouse the public mind to a consciousness of those sublime and beautiful truths which the investigation of the human constitution has developed. While thus feasting upon the richest intellectual banquet which nature offers in any department of her vast existence, I have naturally felt an earnest desire to call in the wise and good, from every quarter, to participate in the feast of knowledge. But, until the present time, there has been no suitable medium through which to address the public. I could not expect, by the mere weight of my own assertion, to make a deep impression upon the public mind, and I had good reason to suppose that, when my discovery of the impressibility of the human brain had already marshaled against me the universal spirit of skepticism

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and was but beginning to receive justice from a few, the promotion of any additional wonders, still more incredible, would be done much to overshadow, with still darker clouds of disbelief, the dawn of true neurological science.

Unwilling, therefore, to tax too heavily the public credulity at that time, I have waited for the gradual establishment of my personal proposition, in reference to the human brain, before presenting an essay upon *Psychometry*. The six years which have elapsed since the discovery, have produced a marked change in public opinion—a prevalence of more liberal views—a willingness to receive from nature newer and profounder truths, and a conviction that experiments upon the human brain are not entirely devoid of interest and fanciful.

In this more favorable condition of the public mind, I submit a frank and unreserved narrative of my experimental inquiries. This may be done with greater ease and pleasure, in view of the fact that I am now addressing a circle of readers comprising many of the most liberal and philosophical class, men who appreciate justly the science of Anthropology, who look with interest upon its recent developments, and who wish to see the journal devoted to progress in this most interesting of all sciences.

With this apology for an apparently dilatory course, I would proceed by asking for my narrative, a candid and patient attention is not to announce a theory, that I write, nor to dogmatize in reference to any matter of opinion—but to present the facts which I have witnessed, and the inferences to which they most obviously lead. If I be but recognized as a fair, candid and careful reporter of facts, I willingly yield to every one the privilege of reasoning upon the facts according to his own philosophy, and drawing the conclusions which they suggest to his own mind. I would but as my personal testimony be allowed its proper force as a sincere statement, and that the questions involved be not slurred over in an indefinite manner by the reader, but firmly and frankly be examined.

I think it but just to demand upon this subject a more liberal and expansive mode of thought than is usually demanded by the order of physical science. The mind of man is so wonderful and mysterious in its action and in its whole existence—is so widely extended, in its nature and in its phenomena, from the ponderable material world, that he who brings to this subject the rigid materialism of chemistry and mechanical philosophy, will find himself unable either to perceive its phenomena or to detect their causes. Every moment of conscious thought presents a grandly beautiful mystery, for the explanation of which, we must be utterly incompetent, unless we can rise to the dignity of the subject, and deal fairly with facts and laws as wonderful as the mystery which they reveal.

He who expects to solve the mysteries of mind, without entering any unusual or extraordinary facts—who thinks that psychology should present nothing more profound or strange than

terial philosophy, and who is determined to resist every fact or principle which is essentially new and wonderful, may be very respectable as a man of science and learning, but he cannot possibly do much for the advancement of Psychology. We should bear in mind, that all the co-operations and correlations of mind and matter, are intrinsically wonderful, but are governed by definite laws, and that these laws, when discovered, must seem, at first, no less wonderful and mysterious than the nature of mind itself. If, then, any fact which I may state should, at the first glance, appear incredible, the liberal reader will bear in mind, that a certain wondrous strangeness is inherent in the very nature of the subject, and that it cannot be possible to arrive at any explanation of the relations between mind and matter, which does not involve principles and facts essentially new.

My investigations of the nervous system of man for the last twelve years, have clearly shown that its capacities are far more extensive, varied and interesting, than physiologists or philosophers have been willing to acknowledge. We find in the nervous system the vast aggregate of powers, which constitute the vitality of man, existing in intimate connection with the vast and wonderful powers of his mind. Those faculties which, in an instant, grasp the remotest objects of a landscape—which fly, in an instant, to the remotest periods of time, and which are ever reaching forth, as if seeking to become commensurate with the universe—are still, with all their buoyancy and power, bound to the fibres and tubes and fluids of the nervous system, by which they instantaneously operate throughout the body. Is it rational to suppose that this nervous matter, which is thus so intimately correlated with mind, and upon which mind depends for the manifestation of its powers, should be entirely limited to the narrow sphere to which it has been assigned by physiologists?—that it should be so intimately connected with the great eternal miracle, our spiritual existence, and yet be so incapable itself of rising above the humble grade of the ordinary operations of vitalized matter?

In truth, if we glance at the subtil phenomena of the nervous matter of our constitution, we must at once perceive how inadequate are the common conceptions of the nervous system. About nine years since, in conversation with Bishop ———, of the Episcopal Church, he informed me that his own sensibility was so acute, that if he should, by accident, touch a piece of brass, even in the night, when he could not see what he touched, he immediately felt the influence through his system, and could recognize the offensive metallic taste. His cerebral conformation indicated uncommon acuteness of the external senses; and when I mentioned his peculiar development, he gave the above statement as an illustration of its truth.

The discovery of such sensibilities in one so vigorous, both in mind and body, led me to suppose that they might be found in many others. Accordingly, in the neurological experiments which I soon afterward commenced, I was accustomed to place metals of

different kinds in the hands of persons of acute sensibility, for the purpose of ascertaining whether they could feel any peculiar influence, recognize any peculiar taste, or appreciate the difference of metals, by any impression upon their own sensitive nerves.

In these experiments, it soon appeared that the power was quite common, that there were many who could determine by touching a piece of metal, or by holding it in their hands, what the metal was—as they recognized a peculiar influence proceeding from it, which in a few moments gave them a distinct taste in the mouth. But this power was not confined, in its operation, to metallic substances. Every substance possessing a decided taste, appeared to be capable of transmitting its influence into the system, and of being recognized by its taste. Sugar, salt, pepper, acids, and other substances of a decided taste, made so distinct an impression, that each could be recognized and named by many of those upon whom the experiment was performed. It did not appear that the sensitive taste was translated to the fingers, or changed any of its known laws, but it did appear that contact of the sapid substance with the papillæ of the tongue was by no means necessary.

The peculiar influence of the substance touched or held in the hand by sensitive persons, appeared to affect the hand locally, thence to be transmitted gradually along the arm, recognized as some peculiar sensation as it passed, and producing no other effect until it reached the chest or the head. In the head it produced an impression upon the brain and nerves, and, if possessed of special qualities, was recognized by their characteristic impression upon the tongue and fauces. The sweetness of sugar, the pungency of pepper, and all the peculiarities of other tastes, were recognized, as in the case of the same substances, instead of being held in the hands, had been gradually, in small quantities, introduced into the mouth.

(It is, perhaps, necessary for me to state, that these experiments were entirely independent of any Mesmeric process, and consist simply of what I have stated. The public mind has been so accustomed to the processes of Mesmeric operators, that unless a special disclaimer is made, it may be supposed that such experiments made upon Mesmeric or somnambulant patients, prepared by a mesmerizing process.)

The number of individuals who could exercise the acute sensibility and taste which I have described, appeared to be variable in different localities, being greater in warm climates than in cold. In some places, one-fourth, or even one-half, of the whole population appeared to be capable of displaying this new power of the nervous system. In other places, not more than one in ten or fifteen could display it distinctly. Mental cultivation and refinement, acute sensibility, delicacy of constitution, a nervo-sanguineous temperament, and a general predominance of the moral and intellectual faculties constituted the most favorable conditions for its exercise.

I need not here discuss the *rationale* of these phenomena. It may be supposed that an impression made upon the nerves

hand, is propagated by contiguous or continuous sympathy to the head, or that some imponderable agent, proceeding from, or through, the sapid substances, conveyed their influence into the body. In behalf of the latter suggestion it may be remarked, that when I placed my hand or fingers in contact with the substance, its influence appeared to pass more promptly and effectually than when it was left to its own power. This I attributed to the passage of nervous influence, or *nervaura*, from my own constitution, through the substance.

I have since proved, by experiment, that a galvanic or electric current, passing through a medicinal substance, will transmit its influence into the constitution which receives the current.

Indeed, the influences which are transmitted by mere contact, are not limited to an impression upon the sense of taste, but convey the entire medicinal power. In the first number of this Journal, the reader will recollect that my experiments in New York were reported by a scientific committee of distinguished gentlemen, and among those experiments were several upon medicinal substances. These substances manifested their full effects upon the constitution of the lady upon whom the experiments were tried, by holding them in her hand.

It would readily occur to the reader that, in such experiments, an excitable imagination might produce important effects, and materially modify the results. The desire to guard against any such delusions, led me to adopt precautions to prevent the individuals experimented upon from knowing the name or nature of the medicine used. It was either concealed from their sight or so enveloped in paper as to be invisible, and thus the experiment was generally made in such a manner, that any play of imagination would have been immediately detected. Sometimes, as in the experiments at New York, the medicine was unknown to all present until the close of the experiment.

It was thus fully established that a large portion of the human race may be affected by medicinal substances, *even without immediate contact*—a fact which I now consider as well settled and familiar as any other in medical science—so much so as to become a necessary subject of medical instruction; and in every course of lectures which I deliver to the medical class in the Institute, I state these principles, and accompany them by immediate demonstration upon the members of the class. Medicinal substances, enveloped in paper, are distributed among the members of the class, who hold them in their hands, while sitting at ease, listening to the lecture and waiting for the effect. It frequently happens that when a vigorous emetic, cathartic, or stimulant, is distributed in this manner, its impression will be so distinctly recognized by some of the members of the class, as to enable them to name it correctly, if they have ever before experienced its operation as a medicine.

During the present session of the Institute, the usual experiment has been made, and the following members, out of a class of about one

hundred and thirty, have experienced decided medicinal impressions by holding in their hands different medicinal substances, principally emetics and cathartics.

"CINCINNATI, January, 1849

"We, the undersigned, members of the medical class of the Eclectic Medical Institute of Cincinnati, have, at the suggestion of Prof. Buchanan, performed the experiment of holding in our hands for a short time (generally from five to twenty minutes), various medicines, enveloped in paper, so as to be unknown to ourselves except by their medicinal effects; and we are convinced that these experiments, distinct effects were produced upon us strictly similar to those which would be produced by the action of the same medicines administered in the ordinary method.

Wm. Owens,	Jason Holloway,	Wm. W. Hadley
J. Pitts,	A. Bauer,	J. S. M. Hawkins
Jas. G. Hunt,	Jas. Milot,	Benj. F. Radcliff
Edward Walker,	Geo. Black,	Wm. Webster,
N. L. Northington,	Benj. F. White,	A. Hildreth,
J. B. Allensworth,	Thos. H. Walters,	S. F. Conklin,
O. D. Brooks,	W. J. Wann,	D. A. Austin,
D. Porter Wooster,	C. W. Arnold,	Wm. H. Jones,
Franklin Talbott,	E. J. Martin,	Thos. Robinson
Alfred Shepherd,	T. M. Cobb,	E. McKenzie,
R. S. Finley,	A. C. Overton,	Jos. Short,
M. T. Perrine,	D. A. McCord,	H. M. Chatterto
A. R. Brown,	J. F. Baker,	J. B. Jones,
Edwin A. Lodge,	J. T. Hance,	C. H. Spining,
	W. H. Shepherd."	

The distinct effects alluded to were such, that in several instances when an emetic (lobelia) was the subject of the experiment, the individual was able to avoid vomiting only by suspending the experiment.

The forty-three gentlemen who thus testify to the effects of experiments upon themselves, constitute nearly one-half of all who actually tried the experiment on this occasion. I have no doubt that if the experiment had been carefully tried upon all of the cases at least sixty-five would have felt its influence. There are not more than a few physicians in our country who possess this impressibility in a high degree, several of whom are professors in medical colleges. B. L. Hill, Professor of Anatomy and Operative Surgery in the Eclectic Medical Institute, authorizes me to mention him as one of those who have experienced the most distinct and perfect impressions in this manner.

There is an analogy to these experiments, in the well known fact, that medicines placed in contact with the skin, especially upon the epigastrium, are capable of producing their usual influence upon the individual. But it has always been supposed that in such cases a partial absorption occurred, and the medicine was brought into actual contact with the nerves. Now, on the other hand, it is demonstrated that no such absorption or contact is necessary.

sary, and that the interposition of paper between the medicinal substance and the hand, or cuticle, does not prevent the physiological impression.

It may, therefore, be recognized as a law of the nervous system, that it is capable of being affected by the subtil influences which emanate from adjacent objects. Influenced by this consideration, I supposed it probable that those who possessed this acute sensibility would be distinctly affected by contact with living beings, and would be able thus to appreciate the influence proceeding from the living nervous action.

This conjecture was soon verified by experiment. I found that all persons of an impressible constitution were sensibly affected by placing the hand in contact with the heads or bodies of other persons. The effect might not be so prompt or forcible as to arrest their attention under ordinary circumstances, yet, by sitting still and concentrating their attention upon the experiment for a few minutes, a decided effect was experienced. In this manner, by placing the hand upon the epigastrium of a patient laboring under any disease, a morbid impression would be experienced, corresponding to the character of his case. For the last three or four years, I have myself become so sensitive to morbid impressions, that I cannot be in contact with a patient even for a few minutes, without being injuriously affected.

When impressible persons thus come in contact with those who are in sound health, by placing the hand upon the different portions of the head or body, they experience, at each point, a distinct effect corresponding to the peculiar vital functions of the part. By holding the hand upon the forehead, the seat of the intellectual organs, they experience an increased mental activity. By holding the hand upon the superior portion of the head, they experience a pleasant and soothing influence, peculiar to the moral organs. Upon each locality of the head, the influence of the subjacent organ may be recognized—and although the impression is generally of but moderate force or distinctness, those who have a high degree of susceptibility may realize the exact character of the organ touched, and describe not only its general tendency, but its particular action and strength in the individual who is examined.

In short, it may be stated, that any person of a highly impressible temperament, who will cultivate his faculties for such investigations, may learn to place his hands upon the different portions of the head, to recognize and describe the action of the various organs, and to estimate their relative strength by the impressions which he receives from contact.

Having thus ascertained that one of impressible constitution could easily diagnosticate the action of the living brain by means of contact, I found that actual contact was not indispensable, but that holding the hand in close proximity to the head, would answer the same purpose, though in a far more imperfect manner. By holding a metallic conductor in contact with the different localities of the

head, the influence of each organ appeared to be transmitted as well as by direct contact of the finger. Thus I have employed pressible persons for several hours, in investigating the action of the brain in different persons—ascertaining the positions of organs, describing their functions, and estimating their comparative strength. A pencil-case, or any other convenient metallic instrument, would be applied to the various points upon the surface of the head, thus a psychological survey would be accomplished, of increased minuteness and accuracy. After several months had been occupied in this manner, ascertaining the exact functions of the brain in different portions, I was tempted to take a step further in advance.

It seemed probable that if the psychological influence of the brain could be transmitted through a suitable conducting medium it might also be imparted to objects in proximity to it, and retained by them, so as to be subsequently recognized by one of impressible constitution. Without relating the experiments which establish this proposition, I would proceed at once to the most wonderful experiment of all.

Believing that the power of recognizing subtil influences by tact might, in the most susceptible individuals, transcend the phenomena which I have just mentioned, as far as they transcend ordinary manifestations of sensibility, I determined to try whether the act of writing, the peculiar influence emanating from the mind of the writer, became impressed upon, or attached to, the paper, so as to enable one of impressible constitution to recognize influence upon contact with it.

Doubtless, to those whose modes of thinking are material, the suggestion of such a possibility may seem entirely chimerical; those who are familiar with spiritual studies, or who have familiarized themselves with the phenomena of animal magnetism, the suggestion will be one of deep interest.

If, at this point, the reader should find his doubts becoming insupportable, let him pause to reflect, that it is a general law of human nature, as it now exists, that we should doubt all extraordinary coveries, when first presented, but that this doubt arises from the strange and unfamiliar nature of the facts, and that so soon as we have become familiar with them, the feeling of doubt and wonder passes away, and we regret that we should ever have placed our minds in an attitude hostile to any scientific truth. Such is the experience of many upon this subject. The facts which I state will arouse their incredulity, but they can so easily make necessary demonstration themselves, their incredulity will be of long continuance. When thus my readers shall have learned to keep the mind prepared for new discoveries, and have also ascertained that my assertions are cautious and reliable, by testing and proving them to their own satisfaction, the most pleasant and friendly relation will be established between us, and I may, perhaps, find that even assertions which are not so susceptible of direct proof will be received with friendly and respectful consideration.

To proceed with my narrative: It was in the latter part of '42, that I made the experiment which I would narrate now—not merely to appeal to the reader's faith, but to give him an example for his own experimental inquiries. I had clearly ascertained in a young gentleman, with whom I had made many experiments, the existence of extraordinary acuteness of sensibility. In a moment's contact with the head of any individual, he would discover his entire character by the sympathetic impression. Reasoning, which I need not now repeat, had convinced me that he possessed the power of recognizing a mental influence in any autograph that he might touch. I was sitting with my young friend in an apartment in the Astor House, when I resolved to test his powers. I proceeded to my trunk and took forth four letters, written by individuals of strongly marked and peculiar characters. I placed them in his hands, and requested him to watch the mental impressions to which they gave rise in his mind, and report his conceptions of the characters of the writers. He did so, and his descriptions surpassed my anticipations. He entered into the spirit of each character as familiarly as if he had been in contact with the individual, and described not only his intellect and his principles of action, but even his personal appearance and physical constitution. He knew not of whom he was speaking—he did not even know what letters I had placed in his hands—yet I can say, without exaggeration, that his description would not have been more correct if he had described the individuals from familiar personal knowledge!

Does this statement, kind reader, appear utterly incredible? I have repeated such experiments more than a thousand times, with similar results, and could adduce the testimony of thousands who have been the witnesses or the subjects of such experiments. If human testimony can establish any proposition, it is sufficiently strong upon this subject. But it is my principal object to induce you to perform similar experiments yourself, and thus remove every vestige of doubt from your mind. My narrative may be wonderful, but you will soon find that you have yourself similar wonders to relate, and will even arrive at some results more wonderful than any communicated by this essay, if you persevere in your experiments.

The description of the four individuals just mentioned, was given almost immediately on taking hold of the letters. It was not (like a description based upon physical clairvoyance) a sketch of their external appearance, and an inference of their characters—it was a sympathetic impression of their minds, describing them from the interior and proceeding forth from their own consciousness to their external relations and their physical development. So thoroughly did he sympathize with their views and feelings, he not only appreciated their position in relation to society, but even discovered their sentiments in reference to each other, and discovered that, between two of the individuals especially, there was an irreconcilable antagonism. So keenly did he feel their mutual hostility, that, after a time, he re-

requested the suspension of the experiment, as it was disagreeable to him to enter into their contentions and realize their unpleasant feelings. As he recognized the feud, which really existed, so correctly (for the gentlemen in question had been once associated together, but were at that time in open hostility), I asked him what would be the effect of their collision, and which of the parties would be most successful if any contest should occur between them? "This one," said he, holding the letter of the stronger man, "would crush the other." Such was the fact. They were distinguished medical men, and the one whose superiority he had so emphatically recognized, had, in fact, by superior talent and force of character, defeated and crushed the other in a well known public contest.

Another of the letters he recognized as that of a man of great mental and physical power. He was one whom I intimately knew—who was as eminent in talent, eloquence and virtue, as in political rank. To obtain the most critical test possible, I requested my friend to state what he thought would be the probable result of a collision between these two eminent gentlemen of different professions. This he declined doing, saying that he did not believe any collision would take place between them. I insisted that he should give his opinion of the probable result of such an event, if it should occur. He still objected, remarking that they would both be very reluctant to come into any collision with each other, and would maintain dignified and courteous relations. This I knew to be true, as I had been frequently struck with the grace, the dignity and the courtesy, with which they met each other on all occasions. But as I insisted upon a description of the probable results of a collision between them, he at length pronounced the opinion, that if any collision should occur, it would go no further than this—that the eloquent statesman might give a gentle rebuke, or check, to the other individual, by which he might slightly wound or humble his pride. This was a true statement of an occurrence which had actually taken place! and the only instance in which any approach to a collision between these eminent gentlemen had ever occurred. Delicacy forbids my alluding to these personal matters in fuller detail. Suffice it to say, that in this first psychometric experiment of the kind, I was fully satisfied that, by this process, we might obtain a *mental daguerreotype* of any one whose autograph we obtain, as perfect as the physical daguerreotype of the features, obtained by the agency of solar light.

In the next number I shall proceed with the narrative of my experiments upon autographs, from the first experimental trials to the recent investigation of the characters of our presidential candidates, Gen. Taylor, Gen. Cass, Martin Van Buren and Gerritt Smith. Before that number is published, I would earnestly request that each reader of the Journal should make a series of these experiments himself, that he may fully realize their character and fairly appreciate their value. To do this, select an impressible individual, according to the method presented under the head of "Interest-

ing Experiments" (in the January number), by ascertaining whether he is susceptible of attraction. When you have found an individual who is evidently attracted by placing your hand near his forehead, while he is standing erect, request him to take his seat and bring his intellectual powers to bear upon a new experiment. If you are not perfectly certain of his possessing the highest degree of impressibility, commence with an experiment upon medicinal substances. Select those of a marked character at first, such as *stimulants* of capsicum, cloves, opium, &c.; emetics of ipecac, lobelia, tartarized antimony, &c.; cathartics of jalap, podophyllum, gamboge, &c.; narcotics of belladonna, stramonium, hyosciamus, &c. Request him to sit still and hold any of these substances between his two hands (his muscles being perfectly relaxed): let the medicines be contained in a piece of paper, if you wish to conceal from him their nature, and let the quantity used be five or ten times as much as would be required for an internal dose. In looking for the results, bear in mind that each medicine produces numerous and complicated effects, and that we should not expect its action to be *merely* emetic, cathartic, stimulant, narcotic, &c., according to its classification in the *Materia Medica*. If we suppose that our patient or subject is deceiving us, merely because his descriptions do not exactly coincide with our imperfect conceptions, we will do him great injustice. Nor will his experiments always coincide with each other. The different amounts of the medicine, and the different states of his constitution at different times, will necessarily modify the results.

If, in this experiment, he shows impressibility, by medicines, in a high degree, it is extremely probable that he will be impressible by autographs. To ascertain this, select from your letters the one which was written with the greatest intensity of feeling and force of thought. If you have any written under deep grief, violent anger, lively joy, or tender love, and especially if you have such as are opposite to each other in their character, select the most marked one for experiment, and place it upon the center of his forehead. Let him place himself at ease, and quietly support the letter with one hand, resting the arm upon some convenient support. Before his taking the letter, it will generally be desirable to excite the intellectual organs by gently touching the central portion of the forehead (just above the root of the nose) for a few moments. Request your subject, while the letter is in contact with his forehead, to yield *passively* to the impression, and follow the natural current of his ideas or feelings. Let him state frankly his thoughts and emotions while undergoing the experiment, and observe if they differ from his previous train of mental operations. If they do, then ask him to infer or conjecture from the impression made sympathetically upon his own mind, what was the mental condition, or what were the mental peculiarities, of the writer.

This he will probably be reluctant to do. He may be conscious of a new and peculiar train of thought or feeling, but he will sup-

pose it accidental, or attribute it to some trivial circumstance. He will be quite reluctant to suppose that he is mentally impressed by the letter. If he gratifies you by making the conjecture, and stating that the letter may have been written under feelings of sadness or grief, and if, upon opening it, he discovers that his impression was true, he may be struck with the coincidence, but he will probably think it accidental. The impressions upon his mind were so vague and delicate, that he can scarcely believe they were produced by the letter. It is only after repeated success in such experiments, that he acquires confidence in his own impressions, and learns to speak out freely.

Sometimes you will find your subject capable of determining correctly only the state of feeling in which the letter was written. With higher powers, he will enter more thoroughly into sympathy with the writer, and appreciate the traits of his character, the strength and peculiarities of his intellect, his favorite pursuits, his usual relations to society, his actual position, his rank or office, his reputation, his general career in life, his age, state of health, personal appearance, and all other peculiarities of his physical constitution. *Much more than this* is frequently accomplished, but this much may easily be verified by any one in the course of a few experiments.

And if we find these things true, to what do they tend? Do they not tend to solve the problem of the relations between MIND AND MATTER?

Does it not appear that something emitted from the person or mind of the writer, has become attached to, or connected with, the paper, as if the mental and the physical were capable of entering into a psycho-material combination? That some mysterious influence or mental substance is attached to the writing, is proved by the experiment. We find that immediate contact of the writing with the forehead, yields an impression more promptly than contact of the writing with the hands. When the letter is held between the hands, the impression is at first local—in the hand. Thence it gradually passes up the arm, like the influence of a medicine, and reaches the brain, where it affects the mental organs and gives an impression of character. We find, too, that while immediate contact of the writing with the forehead imparts readily its mental influence, that influence may be imparted even if the writing in question be enveloped in a fold of blank paper; but every additional fold of paper intervening between the head of the subject and the writing investigated, will retard the experiment, and increase the difficulty of arriving at a correct decision. Thus it appears, that a psychological influence, or power, has become attached to the writing, and is capable of exerting its influence with different degrees of intensity at different distances.

This leads us, then, to the threshold of the science which explains the connection between mind and matter. If such combinations or unions exist, they constitute the subjects of a science which

might be analogically called *Psychological Chemistry*. The combinations of mind and matter are continually occurring in nature. The grains of corn which this year are growing in open fields, unconnected with animal life, are destined, next year, to yield their particles to enter into combination with the active minds of the present generation. The carbon, oxygen and hydrogen of the corn, are capable of entering into this union by means of a well known process. They do not change their nature, but continue still the very same carbon, oxygen and hydrogen, with the same chemical powers and properties. They merely change slightly their molecular arrangement, enter the cavities of the human body, and pass, in company with the vitalized blood, throughout its channels of circulation, and in contact with the various vital structures of the body. The elements of the corn, after being suitably dissolved, become vitalized simply by contact with the interior of the living organs of the body.

The most careful investigations of physiologists have gone no further than this. They show that the absorbed chyle from the digestive organs gradually approximates the character of blood, as it moves toward the lungs, and that after it has passed the rounds of the circulation (modified as it goes by various secreting organs), it becomes fully vitalized and ready to unite with the living organs. Then where a demand exists for new materials in any of the tissues, this well prepared substance takes its place, and by means of contact or union with the vital tissues, becomes a part of that living, mind-obeying machine, the human body. Previous to this process, the vegetable carbon had no connection with mind, but now it has become implicitly obedient to the mind operating through the brain. Thus a large number of the substances of the material world are capable of becoming united with the human mind as its obedient organs, by coming under the influence of contact with the living body in its interior.

Contact and the nervous influences transmitted by contact, are the efficient causes of the change from dead to living substance, by which mind and matter are brought into union. But if any change or union is wrought by *immediate contact*, may not phenomena of a similar character be produced at a greater distance? May not the vitalizing and *mentalizing* influence extend to substances exterior to our bodies as well as to those in the interior?

That the vital influence may thus combine with inanimate matter, is proved by the phenomena of contagious and infectious diseases, by the experiments of animal magnetism, and by these experiments on letters. Whether these mental influences proceed directly from the mental organs to the paper, or are transmitted by the arm and conducted by the pen, need not be discussed at present. Suffice it to say, that any highly impressible individual may recognize, in any piece of writing, the entire mental and physical influence of the writer.

By appreciating this influence justly, he may measure accurately

the entire mental character. There are other methods of arriving at a scientific knowledge of character, or measuring the mind; but the art of mind-measuring, or *Psycho-metry*, has no method of investigation more perfect or delicate, and universally applicable, than this, which is, *par excellence*, entitled to be called **PSYCHOMETRY**.

Will you not, kind reader, do yourself the justice to institute these experiments which I have described? I pledge myself, that if you persevere in them, you will fully succeed. Until you have done this, let me suspend my narrative. Meantime, repeat the experiments as fully as possible which I have described, and then, when we meet again, this narrative will be continued, with all the advantages of positive knowledge and mutual sympathy.

The sublime bearing of these discoveries upon the question of the nature and immortality of the soul, and their important practical application to the investigation of character in public and private life, will readily occur to the reflecting mind. The phrenologist will rejoice to recognize in this new science, a method of ascertaining character far more accurate and satisfactory than Craniology, and the speculative philosopher will perceive that we have reached the commencement of a new era in science.

(*To be continued.*)

ART. II.—REICHENBACH'S "RESEARCHES ON MAGNETISM, AND CERTAIN ALLIED SUBJECTS."

FOR several years I have taught the doctrine, that the most important subjects of research to Philosophy, were the imponderable agents—that power and causation must be sought in those subtil media, which are above the ordinary forms of matter. I have insisted that we were but upon the threshold of this great department of science; and that imponderable agents existed in inorganic matter, of which "natural philosophers" have had no knowledge. I have spoken of the **NERVE-AURA** of the human constitution, which sustains interesting relations to other imponderable media, and have made experiments on the conducting power with which it is transmitted through different substances.

The great variety of imponderable agents peculiar to the human constitution, opens a vast field for scientific exploration in the intermediate region between Psychology and Physics. The principles which Neurology demonstrates, in reference to these *psycho-physical* departments of science, I have not thought it expedient to pub-

lish, or teach *in extenso*, until the details of *that science* shall have been distinctly laid before the public, and its general truth more distinctly recognized.

The action of *imponderable forces* in the physical world, which might, perhaps, by a liberal extension of the term, be called magnetic, opens a large field for important practical inquiry. In this department of science, I have not anticipated any very sudden inroads from philosophers of the present age. Their habits of thought have been so rigidly fixed by the formula and details of the physical sciences heretofore developed, as to render it exceedingly difficult for them to enter this novel field. This, however, has been the case in all ages. The habits of men of science in the cultivation of any particular science have been, like the habits of handicraftsmen in the practice of any particular art, unfavorable to any profitable pursuits, which required a change of their apparatus and materials, or a new sphere and mode of operation.

Although aware that the new scientific field must, in time, be entered, surveyed and explored, by a multitude of *savans*, I felt satisfied, from past history, that there was but little probability of being jostled in this region by the vanguard of the army of science. With this feeling of security, I have had but little concern as to the immediate publication, or as to the rapid progress and maturing, of my researches in this department. It was, therefore, almost with a feeling of surprise, that I heard, in 1846, of the researches of a distinguished European philosopher in this direction. The Baron Von Reichenbach, one of the ablest chemists of the old world, published his researches and discoveries on this subject, in a German periodical. Of this voluminous essay, or of the abstract of its contents, which has been published by Professor Gregory, of Scotland, I have not yet obtained a copy. I hope, at some future period, to give the whole subject an elaborate review; but, in the meantime, present the following article from the 105th number of the Democratic Review, as an interesting notice of the Baron's Researches. He has entered boldly into that field of wonders which lies parallel to animal magnetism; and if he does not lose *caste* among his scientific brethren, on account of the boldness of his reports therefrom, it is probable that he may perform the office of a pioneer in leading the scientific minds of Europe through the vast region upon which he has entered.

Whenever scientific men begin, in good faith, to investigate this department of knowledge, they will be tempted, as they approach so nearly, to enter the same path of philosophical investigation which I have marked out; and, in so doing, they will demonstrate the truth of the entire science of Neurology.

Whether the scientific men of the present generation will take hold of the science of Anthropology, as developed by experiment upon the brain, or whether they will hold back, in sluggish inertia, until a younger generation have come forward, remains to be tested by time. But if there be many of the spirit of Reichenbach, it is

not impossible that even the learned academies of Europe may pass the Rubicon, and recognize the fact that there is a science of man, founded on the experimental demonstration of the functions of the brain.

The following is the article from the Democratic Review. Its liberal spirit is an honor to that periodical, and it is much to be regretted that the *scientific* journals of our country generally, do not manifest the same spirit of respect for scientific researches beyond the beaten path. More especially is this true of our medical journals, in the larger portion of which a rigid spirit of conservatism resists, with cold pertinacity, the liberal tendencies of the age.

"REICHENBACH'S 'RESEARCHES ON MAGNETISM,' &C.*

"How often are we, who may be said to stand upon the watch-towers of time, to announce the approach of new forms within the political or literary horizon, compelled to repeat the hackneyed phrase—'Truth is strange—stranger than fiction!' In this nineteenth century, particularly, every day startles our habitual modes of thought with the birth of novel apparitions. 'Our organs of wonder,' to speak phrenologically, have been so kept upon the rack by the prodigious advances of modern science, that they seem to have lost their power; and after this, like the man in the play, we are prepared to be astonished at nothing. What with electric telegraphs, steam sea-dragons, and explosive vegetables—with daguerreotypes, phonography and clairvoyant shoemakers, we are in a condition to believe in astrology and the black art, and almost everything else!

"How men of strong prejudices and conservative turns of mind—men who, like Professor Lewis, think that one is to *settle* his convictions immovably some time or other—feel under this threatened invasion from the realms of science, we cannot say; for, even with all our hopeful and reforming tendencies, we are tempted to exclaim, with Shakspeare's hero, when he saw the march of the murdered spectres—'Will the line stretch out to the crack of doom?' In other words, our credulity is getting exhausted, and we long for some respite from our attempts to keep up with the march of mind. Unlike old Sir Thomas Browne, who said that there were not enough miracles in the two Testaments for his capacity of faith, so that he yearned for a great many more, we must confess it, we are a little tired of believing, and desire to see more philosophy under all these accumulations of strange phenomena. The marvels of magnetism are unquestionably all facts, for the evidence on that head cannot be resisted; but is it not the season for some thinker to give us the why and wherefore of these remarkable occurrences?

"Fortunately we are on the way to it, in the recent experiments of Reichenbach, which are of such a sort that we cannot pass them

* Researches on Magnetism, and certain allied subjects. By Baron Von Reichenbach, in the *Annalen der Chemie und Pharmacie*. Supplement for May, 1845.

by on any account. The auspices under which they have been given to the world—to say nothing of the high reputation of the author for accuracy and truthfulness in his profession, or their own intrinsic importance and interest—will more than justify the space we intend to devote to their exposition. First, however, we must say a word preliminary as to the sources of our information.

"The scientific world is well acquainted with the *Annalen der Chemie und Pharmacie*, a German record of the natural sciences, conducted with characteristic ability, by Professors Liebig and Wohler—philosophers not unknown even in this country. Well, this periodical for May, 1845, contained a supplement of some two hundred and fifty pages, which related to what was termed 'Researches on Magnetism, and certain kindred subjects,' by Baron Von Reichenbach. These researches were so extraordinary in their character, that they immediately excited the attention of the Germans—always on the *qui vive*, like St. Paul's Athenians, for some new thing; but in England and the United States they fell almost still-born from the press. A few obscure inquirers, both here and abroad, deeply interested in whatever was likely to throw light on magnetism, were, of course, aware of what was going on; but not having access to the popular journals, were not enabled to enlighten the public. The first notice taken of Reichenbach's discoveries in England, we believe, was by Professor William Gregory, a name familiar to science, who was so impressed by the Baron's views, as to be induced to translate and publish an abstract of their contents. His pamphlet is now before us, and we commend it to some of our publishers for re-publication.

"As to the character of Reichenbach, and the reliability of his statements, Professor Gregory says, in giving an account of how he came to undertake the abstract:

"The name of the author was well known to chemists, in consequence of his laborious and successful researches on the tar of wood and coal, which filled the scientific journals for several years, and made us acquainted with creosote, paraffine, cupion, and many other new and interesting compounds, discovered by him in tar.

"Baron Von Reichenbach's character as an experimenter, has always stood particularly high, for minute accuracy and untiring perseverance; and it was not possible for any discoveries or experiments to be presented to the scientific world by one more entitled to its confidence, in every point of view.

"The translator read Baron Von Reichenbach's Memoir with that interest which a long and familiar acquaintance with his former researches naturally inspired, but soon found that his present subject possessed a much higher interest, and that his researches promised to yield most interesting, as well as practically useful, results. As he proceeded, he recognized the same ardent zeal in the pursuit of knowledge, the same powers of minute observation, the same accuracy in the details of his experiments, the same caution in devising all possible checks and control in these experiments, and the same

logical turn of mind in drawing his conclusions, which had, from the beginning, characterized all the researches of Reichenbach.

"However unexpected, and even startling, were some of these conclusions, the translator found it impossible, feeling secure as he did of the exceeding accuracy and truly scientific character of the author, to withhold his assent from the facts on which they rested; and from that time, he resolved to introduce these very important and striking discoveries, in their place, in his lectures."

"This testimony—and Professor Gregory takes occasion several times in the course of his Preface, to repeat his implicit confidence in the accuracy of every statement made by Von Reichenbach—coming, as it does, from one who stands so deservedly high in the annals of British science, must remove every doubt as to the character of the German philosopher, and dispose us to receive at once, as true, the experiments he describes. We shall proceed, therefore, to inform our readers of the general results at which he arrives.

"In the first place, he shows, what, indeed, had long before been known, that magnets of a certain power are capable of producing effects on the human body, in a certain proportion of human beings; the proportion, in one trial, amounting as high as eighteen out of twenty-two females. These effects are mostly described to resemble the passage of an *aura*, or breath, over the body; sometimes warm and sometimes cool, and occasionally like the crawling of an insect or the pricking of a pin. They take place when the patients do not see the magnets, and are not aware of what is going on, in both males and females, though the more frequently in females, and in persons of strong, healthy constitutions, though they are more easily elicited from sensitive and nervous persons. Persons suffering under spasmodic diseases, such as catalepsy, paralysis, and hysteria, are particularly sensitive, while lunatics and somnambulists are uniformly so. Reichenbach details an immense number of experiments on which he founds these inferences. The fact has often been adverted to by the older animal magnetizers, and the magnet has made part of the remedies used in the practice of some physicians; but its effects have never before been demonstrated with so much caution and clearness.

"In extremely sensitive patients, Reichenbach detected such an exceeding acuteness of sense, that in some instances the influences of the magnet were painful, and threw them into convulsive fits. He discovered, also, by means of the same class, that a light, invisible to most persons, constantly issues from the poles and sides of powerful magnets. They hear and understand what is spoken several rooms off, are nauseated by the most delicate kinds of food or perfume, and possess such irritable vision, that while on the one side they cannot endure the heat of the sun or of an ordinary fire, on the other they are able to distinguish the colors and outlines of objects in rooms too dark to be penetrable by the eyes of other people.

"In regard to the luminous appearance of magnets, it was ascertained that it was the same at both poles. It had the form gener-

ally of a luminous vapor surrounded by rays, which were constantly in a shooting motion, but without much resemblance to fire, while for the most part, though mixed at times with iridescent color, and denser toward the middle of the end of the magnet than at the corner. In all the experiments, which were frequently repeated, the results were very much the same; but as the power of the magnet was increased or diminished, the phenomena were more or less distinct. The health of the patients, also, seemed to have something to do with the success of the experiments; for as they were well or ill, and in the degree of their recovery from disease, with a few exceptions, the luminous appearances were more or less decided. Yet these variations, whether from one cause or the other, were, in the large number of cases examined, singularly uniform.

"It appears further, from the Professor's first series of experiments, that the magnetic light was different from the magnetic flame, inasmuch as the latter is flickering and does not radiate, while the former radiates strongly, yields when blown upon, or a material body is waved across it; yet neither gives out any heat, at least none that affected Nobili's Thermascope. The magnet flame changes its form and color according as the magnetic circuit is open or closed; according as the magnet is one made by streaking with another magnet or is an electro-magnet, and also, according as it is free or under the influence of other magnets. The magnetic flame exhibits positive and negative poles, though these poles manifest no mutual attraction, while they act on the daguerreotype, and may be brought to a focus like other flames by means of a glass lens. On the whole, Dr. Reichenbach thinks that these flames resemble the aurora borealis, or northern lights, in their properties, and he therefore conjectures that those well known phenomena are intimately connected with the peculiar cause, whose existence is revealed in his experiments. The inference of the connection between light and magnetism, Professor Gregory maintains, is confirmed by the subsequent and recent researches of Faraday, who has shown, by a quite independent course of experiment, that lines of magnetic force are luminous; for, even if we reject the conclusions of Reichenbach, because they are derived from sensitive patients, there can be no question of their truth when derived from the wholly different mode of the daguerreotype.

"Having thus satisfactorily ascertained, from a large number of the most cautious and faithful observations, that the natural magnet exerted a very perceptible influence on the human body, in certain conditions, Reichenbach's attention was next turned to the experiments formerly described by Dr. Petatin, of Lyons, and other philosophers—such as the attraction of the hand by the magnet, and the ability of sensitive patients to distinguish magnetized from ordinary water. He was speedily enabled to corroborate these facts in a variety of ways, which left no doubt upon his own mind, or upon that of other competent observers, whom he called in to take note of the results. He found, as Mesmer and his disciples had

frequently before alleged, that the hand could be magnetically attracted; but he did not find that the hand had any effect in attracting other bodies—such as iron filings—usually attracted by the magnet. The power, whatever it was, was not reciprocal, nor could his patients succeed in imparting the attractive power to needles, &c., according to the statements to that effect of Thilorier, who experimented some time since, on certain nervous persons. But in his attempts to magnetize water he was completely successful; and Professor Gregory has no hesitation in saying, upon the strength of Reichenbach's descriptions, that this is henceforth to be regarded as among established physical facts. Reichenbach commenced his researches 'strongly prejudiced against the mesmeric idea of magnetized water,' but he was compelled to admit what soon became a daily occurrence before his eyes. He says, 'it was impossible to oppose a fact like this by arguments, and he thought it more rational to admit the fact at once, whether he could understand it or not, and wait for the explanation.' But Reichenbach was still more surprised to see that this magnetized water possessed an attractive force over the human hand, similar to that of the original magnet. A phenomenon so singular, he was persuaded, could not stand alone, and he therefore tried whether the same effect could not be produced by other bodies besides water, hoping by that means to arrive at some general law. Accordingly, a large variety of substances, such as minerals, drugs and preparations, were subjected to the influences of the magnet, and then applied to his patients in the same way the water had been, when lo! similar results were obtained, but with some obvious differences as to power. To find the cause of these differences, he proceeded to try the same substances without their being magnetized, when he discovered, to his increased astonishment, that they still acted on his patients with pretty nearly as much power as they had when magnetized. The effects were more decided when the patients were in a diseased or cataleptic state, than when they were in their normal condition. In crystalline substances, however, he observed that while some exerted an attractive effect on the hand, others only produced a strong convulsive movement. He therefore prosecuted his experiments on crystals with great assiduity, until after a time he was able to classify them according to these different properties. The question then arose, whether the force existing in crystals was identical with what is commonly called magnetism? Reichenbach, guided by the previous experiments of Haüy, Biot and Coulomb, after a variety of trials, came decidedly to the conclusion that it was not, but that it was a distinct force, and, in fact, a NEW IMPONDERABLE. We cannot detail all his experiments on this head, but his results are summed up by Professor Gregory, as follows:

"1. That every crystal, natural or artificial, exerts a special action on the animal nerve, feeble in healthy persons, powerful in many diseased individuals, strongest of all in cataleptic cases.

"2. That this influence is seated chiefly in the axis of crystals,

and being most active at the opposite ends of the axis, is, consequently, polarized.

"3. At the poles, light is sent forth, visible to eyes rendered preternaturally acute by disease—especially by nervous disease.

"4. In certain diseases the crystal attracts or solicits the hand of the patient by a kind of attraction analogous to that of the magnet for iron.

"5. But the crystal, in virtue of this peculiar influence, does not attract iron—has no tendency to any peculiar direction; when freely suspended, does not attract the magnetic needle, and induces no electric current in a coil of wire. The new influence or force, therefore, is not magnetism.

"6. The force may be transferred to other bodies, which may be charged with it by contact.

"7. Matter possesses some degree of coercitive power in regard to this force, so as to retain it, but only for a limited time, within which the charge disappears.

"8. Different bodies conduct it with different degrees of facility.

"9. The power in matter, of being charged with this force, is directly proportional to the strength of the force in the crystal employed.

"10. The force differs, qualitatively, at the opposite poles—at one causing a sensation of coolness, and at the other of warmth. Quantitatively, the cool pole is weaker than the warm one.'

"The similarity of some of these phenomena with another series, which had been described for many years under the name of animal magnetism, suggested to Reichenbach the question, whether other analogies did not exist between the two, and whether animal magnetism might not, like the crystallic force, be subjected to physical laws. He had purposely abstained from reading the literature relating to the latter, partly from a sceptical aversion to it, and partly that his mind might not be biased in the independent series of investigations which he had undertaken. Before proceeding, however, to determine the questions he had started, it seemed to him necessary, first of all, to inquire what part ordinary terrestrial magnetism played in these phenomena. If a magnet or needle produces such decided effects on sensitive persons, he reasoned that then the magnetism of the earth, which gives the needle its direction, must have an influence on the animal nerve. And under this impression repeated trials were made, both upon healthy and diseased subjects, and at many different times. The experiments we cannot give here, but will again avail ourselves of the abstract of Professor Gregory, to condense the general results. Reichenbach then established the following positions: That the human hand, passed over sensitive persons, acted upon them like the poles of crystals; that the power which acts thus is conductable through all bodies, like the force of crystals; that, like the same force, it disappears from the charged bodies in a short time; that bodies also retain it, and have a coercitive power in reference to it;

that the capacity of being charged is the same for both forces in bodies; that this force is polarized in human bodies, as the other in crystals; that both are uninfluenced by the earth's magnetism; that both exercise a mechanical attraction on the hands of cataplectics; and that both exhibit beautiful luminous phenomena, visible to the sensitive. Reichenbach, therefore, concludes, *that the laws of crystals and the so-called Animal Magnetism, are one and the same*, so that the laws which regulate the former admit of a full application to the latter. And Professor Gregory remarks, that he had, before he heard of Reichenbach's success, been witness to several of these results in experiments of his own, and refers particularly to one where a sensitive patient had seen flames issuing from the palms of human fingers. This last phenomenon is singularly interesting and bears out many asseverations that have been made by mesmerists and patients, but which the scientific world have consented all along to regard as the height of charlatanism and absurdity. But now the facts are demonstrated by high and unquestionable scientific authority, we suppose they will be generally admitted.

"We have said above, that the two forces referred to were independent of the earth's magnetism; but it must not be inferred that the patients on whom the experiments were made, were likewise susceptible to influences from this grand source. On the contrary, both healthy and diseased subjects were found to be sensitive to this respect. It was found, also, that the rays of the sun and moon, heat, friction, artificial light and chemical action, were all so far from being independent of the new and peculiar magnetic power; and that all these were accompanied by the luminous appearances. The fact that electrical action was a source of the new power, suggested to Reichenbach several highly curious explanations of well-known, but hitherto unaccountable, phenomena. That curious hotch-potch, which has been called the Magnetic Boquet, and to which certain medical practitioners have ascribed great healing virtues, not without the heaven of truth in their asseverations, was found to be a source of the new power, because subject to a slow and long-continued chemical action. But a more interesting application of his discovery was made to those church-yard lights, which have so often excited the fears of the superstitious and ignorant. A singular occurrence, which took place at Colmar, in the garden of the poet Pfeffel, led Reichenbach to his inquiries in this direction. The facts of the case are thus given:

"The poet, being blind, had employed a young clergyman of an evangelical church, as amanuensis. Pfeffel, when he walked, was supported and led by this young man, whose name was K. As they walked in the garden, at some distance from the house, Pfeffel observed that as often as they passed over a particular spot, the arm of Billing trembled, and he betrayed uneasiness. On being asked, the young man reluctantly confessed, that as often as they passed over that spot, certain feelings attacked him, which he could not control, and which he knew well, as he always experienced

same in passing over places where human corpses lay buried. He added, that at night, when he came near such places, he saw supernatural appearances. Pfeffel, with a view of curing the youth of what he looked on as a fancy, went that night with him to the garden. As they approached the spot in the dark, Billing perceived a feeble light; and when still nearer, he saw a luminous ghost-like form floating over the spot. This he described as a female form, with one arm laid across the body, the other hanging down, floating in the upright posture, but tranquil, the feet only a hand-breadth or two above the soil. Pfeffel went alone, as the young man declined to follow him, up to the place where the figure was said to be, and struck about, in all directions, with a stick, besides running through the place of the figure; but the ghost was not more affected than a flame would have been. The luminous form, according to Billing, always returned to its original position after these experiments. Many things were tried during several months, and numerous companies of people were brought to the spot; but the matter remained the same, and the ghost-seer adhered to his serious assertion, and to the opinion founded on it, that some individual lay buried there. At last Pfeffel had the place dug up. At a considerable depth was found a firm layer of white lime, of the length and breadth of a grave, of considerable thickness; and when this was broken into, there was found the bones of a human being. It was evident that some one had been buried in the place, and covered with a thick layer of lime (quick-lime), as is generally done in times of pestilence—of earthquakes, and other similar events. The bones were removed; the pit filled up; the lime mixed and scattered abroad, and the surface again smoothed. When Billing was now brought back to the place, the phenomena did not return, and the nocturnal spirit had for ever disappeared.'

"This story created prodigious attention at the time, and the learned, as well as the unlearned, gave it sundry very frightful interpretations. The character of the narrator raised it above all suspicions of untruth. When it came to the ears of Reichenbach, he inferred at once that the effect might have been the result of natural and physical causes. He knew that a dead body was the seat of an infinite number of chemical decompositions and changes; he knew that quick-lime in a pit had affinities for various organic matters, which would give rise to slow fermentations, &c.; and he knew, finally, that rain-water, filtering through the earth, would contribute to excite the chemical working. He concluded, therefore, that a luminous appearance must result from the chemical action, and that sensitive organizations would be likely to detect its presence. In pursuance of his theory, he contrived to bring a highly sensitive person, by night, into a church-yard. The result more than justified his anticipations. His patient saw delicate waving lights issuing from several of the graves; without form or shape, it is true, but rising some spans above the surface of the ground, and, in one instance, four feet. On other occasions, the same phenome-

na were exhibited. The appearance was that of a luminous mass, intermediate between a fog and a flame, and was more vivid over new graves than old ones. Thus we find, as Prof. Gregory remarks, that many superstitious tales are susceptible of a clear and scientific explanation, so that the wonders of second-sight and ghost-seeing lose many of their marvelous qualities.

"But a more important application of his discoveries has been made by Reichenbach, to the theory of digestion and respiration. As he had demonstrated, to his own satisfaction, that every chemical action evolved the new magnetic force, he suggests that digestion, which is but a long-continued chemical action, may supply the whole human system with the new power. And he urges the same view in respect to respiration, explaining, in this way, the radiation of polarized light, &c., from the ends of the fingers. Liebig, as all our scientific readers know, had before derived the motive force of the human system from digestion, and its heat from respiration, maintaining, at the same time, that both were the result of chemical action. Reichenbach imagines that his own researches have conducted him to the same end; and that, from his having arrived at the result by a different route, there is a strong probability that the theory of Liebig will be sustained triumphantly by subsequent teachings of Nature.

"Such is a hasty outline of the important inquiries of a distinguished philosopher in a new direction. We shall make no comment upon them, as they speak for themselves; but we cannot refrain from the single remark, *apropos* of the spirit in which the mesmeric developments have been received hitherto, that scientific men should not be overwise, lest the progress of research very soon compels them to eat their own words, in shame and confusion of face."

ART. III—VAUGHAN'S DISCOVERIES IN ORGANIC CHEMISTRY.

SOMETIME last summer, I found at my door a man of humble appearance, with a few pamphlets in his hands, which I supposed he had been sent out to deliver. He handed me a copy—I glanced at the title, and soon learned that it was a scientific essay, from the pen of my humble visitor. I invited him in, and found under his unpretending and diffident address, a current of clear scientific ideas, and a mind accustomed to original inquiry. I immediately felt a lively interest in the progress of his researches, and as soon as

practicable, gave his essay an attentive perusal. It was entitled—**"A NEW SYSTEM OF VEGETABLE PHYSIOLOGY, designed to account satisfactorily for the phenomena which take place in the vegetable kingdom, and to show the influence of Heat, Light, and Electricity, ON VEGETATION. BY DANIEL VAUGHAN, Cincinnati. Published for the author, 1848."**

Certainly this is a bold title page! It promises much; and if its promise be fulfilled, the humble country schoolmaster from Kentucky, Daniel Vaughan, will have some reason to be proud of his achievement. It is certain, at any rate, that Mr Vaughan is no pretender; he has all the modesty, simplicity, sincerity and diffidence, which give assurance of the faithful, honest, pains-taking student of nature. His essay, although it shows no brilliant powers, exhibits much ingenuity and cautious research.

This class of researches is of high importance to the anthropologist. The operations of the human constitution have already been greatly elucidated by the progress of pathological chemistry; and this science, slowly as it progresses, is one of the most promising sources of physiological and pathological knowledge. Every difference in temperament, or in the moral and intellectual characteristics of men, is accompanied by some difference in the chemical proportions and atomic arrangements of the brain, the body and the circulating fluids. The time is slowly approaching, when these chemical differences will be fully known. Every discovery in this direction is important, and should be hailed with pleasure by the student of man.

The researches of Mr. Vaughan, though designed for the elucidation of vegetable chemistry are not devoid of application to human physiology, however foreign that subject may have been to his purpose. Partly on this account, but mainly to bring before the public the views of this ingenious chemist, I would present a brief statement of his doctrines and experiments.

The principal experimental discovery, and fundamental part of Mr. Vaughan's essay is this, *that carbonic acid may be decomposed by means of the evaporation of water at a low temperature.* This he proves, not only by referring to many facts in nature, but by a very simple and conclusive experiment. By impregnating water with carbonic acid, and allowing it to stand in the open air and sunlight, he finds that the carbonic acid in the water is gradually decomposed, and carbon, in the form of a dark powder, is deposited on the bottom of the vessel. The carbonic acid, for this experiment, may be obtained by pouring hydrochloric acid on common limestone, or marble, which will yield the carbonic acid combined with their lime; or, it may be obtained from any fermenting substance—as from yeast, sugar dissolved in water, sweetmeats, apples, grape juice, &c. The fermenting substance should be placed in a small vessel, and that set in a larger vessel of water. Then, by inverting a bowl, or vessel of intermediate size, over the former, the gas that is evolved will be confined and compelled to impregnate

the water before it escapes. Under these circumstances it will be found, that, in the course of a few days, the carbonic acid which has entered the water has been decomposed freely, except where it is sheltered from the light, and that the carbon is precipitated on the bottom of the vessel. To show that this is not a sediment from impurities of the water, or from the dust of the atmosphere, another vessel of water should be kept exposed in the same manner, without any impregnation of carbonic acid, which will serve as a standard of comparison.

The decomposition of carbonic acid, in this instance, is supposed to take place by means of the electric forces generated in the evaporation of water. The negative electric condition of the water, and the positive condition of the vapor, present the requisite conditions of galvanic action. The carbon goes to the negative pole, or water; and the oxygen goes to the positive pole, the watery vapor. Thus, the latter escapes into the atmosphere, the former sinks into the water, and, after being dissolved or suspended therein, is finally precipitated in an insoluble form.

The principle involved in this simple experiment has a vast range of applications in nature, and overturns many of the prevalent notions of chemists. It has been supposed, for example, that the purity of the atmosphere was owing entirely to the action of vegetation, which consumed the immense quantities of carbonic acid given off by the lungs of animals, by fires, volcanoes, vegetable decay, putrefaction, &c. But, according to Mr. Vaughan's demonstration, the purification of the atmosphere is at all times going on independent of vegetation. Wherever water is evaporating, especially when assisted by the sunlight, carbonic acid is undergoing decomposition. The moist surface of the earth, the ocean, rivers, lakes and marshes, as well as the leaves of trees, are engaged in the great duty of purifying the atmosphere and restoring to the bosom of the earth the carbonaceous material that is the source of its fertility. If moisture is absent, the land becomes sterile; but, if properly supplied, it produces a gradual deposit of carbon and accumulates a deep bed of vegetable mold, as in the prairies of Illinois. But if the deposit be accompanied by an excess of evaporation, as in marshes, the amount of negative electricity produced, causes a deposit of the carbon in an insoluble form, unfitted for the purposes of vegetation, but appropriate to the formation of beds of peat, or bituminous coal.

Thus, by a single experiment, the whole doctrine of the vegetable origin of coal, and of the formation of an arable soil by vegetable decay, is completely overthrown, and both are referred to a simple and satisfactory chemical process, which is going on at all times, and in all places on the globe. The purity of the air, and the fertility of the soil, thus appear to depend upon a chemical process, which is unceasingly active, and which would seem to be far better adapted to the accomplishment of such purposes, than the limited agencies to which they have usually been ascribed.

By this process, according to Mr. Vaughan, humus, or vegetable mould, is formed on any barren surface which is watered by the rain, or otherwise, and thus a soil is prepared in which plants may grow—without which process he conceives it impossible to form a soil, by the laws of nature, where no vegetable mould exists to support the first plants. The superior fertility of clayey to sandy soils, he ascribes to their superior power of retaining moisture to sustain evaporation.

According to the common idea, that the renovation of the soil arises exclusively from the decay of vegetable matter, it would be impossible to account for the renovation of poor, moist soils, which are left to fallow, while vegetation is kept down by the plow. It would seem that the process of fallowing must necessarily result in barrenness, whereas experience has proved its restorative effects. Mr. Vaughan's theory accounts for this, by showing the continual regeneration of the soil from atmospheric sources.

According to this theory, the fertility of the soil depends upon atmospheric conditions. Upon the supply of sufficient moisture by means of rain, and upon the existence of sufficient dryness in the atmosphere to produce an incessant evaporation, which, at the same time, promotes vegetable growth and supplies fertility to the soil. Winds from the north, which pass over land, are dryer than those from the south, because the cold has precipitated their moisture. Hence, they promote vegetation more efficiently; and this he considers the cause of the prevalence of moss upon the northern sides of trees, in preference to the southern. It is not because the moss shuns light, but because it seeks the better nourishment which is afforded on the northern side, under the influence of an evaporating wind. The vast fertility of India he ascribes to the influence of an abundant moisture, aided by winds, from Northern Asia, crossing the Himmalayah mountains, and thus acquiring the dryness which accelerates vegetation. For the same reason peat is most abundantly formed in the location most exposed to the dry north winds.

But it would seem, according to his theory, that the bottom of lakes and oceans, would be universally covered with a deep layer of vegetable mould, peat or coal. This difficulty Mr. Vaughan removes by affirming, that pressure promotes the combination of carbon with oxygen, and thus the carbonaceous materials, which fall to the bottom of the ocean, become reconverted into carbonic acid, and even the vegetable mould brought down by rivers undergoes the same process at the bottom of the ocean, and is ultimately restored to the atmosphere! The formation of vegetable mould takes place chiefly in the soil itself when moderately moistened. The formation of insoluble carbonaceous materials, as coal, insoluble humus, &c., takes place in water of but moderate depth, and the whole is counteracted when the depth of the water becomes sufficient to produce any material pressure at the bottom. At the margin of shallow ponds, or streams, and about water falls, this process is going on most actively (by means of evaporation), which accounts

for the abundance of green carbonaceous and slimy substances in such localities.

In these processes the solar light lends an important aid in the decomposition of carbonic acid, while heat and electricity exert the opposite influence, producing a tendency to ferment and give off the precipitated carbon, in the form of carbonic acid. Hence a rapid evaporation tends to consolidate the tissues of plants, producing an abundant precipitation of carbon, the basis of their structure; while on the other hand, the condensation of moisture produces an evolution of heat and electricity, favorable to decomposition and to the evolution of carbonic acid.

The part that electricity plays in vegetable life, is presented in an interesting and novel light in the following extracts, and the explanation which they give of the cause of the POTATO ROT is the most satisfactory that has yet been published:

"§38. The elaboration of the sap, or the conversion of humus into woody fibre, and into the various products of vegetation, is effected by the currents of electricity to which I have alluded. I have given instances of the effects of evaporation, in causing the fixation of carbon and increasing the insolubility and solidity of bodies. We may readily conceive that it must impart solidity to the carbon dissolved in the sap, which is only an extension of the principle called into action in the cases to which I have alluded. If we suppose this principle to be vitreous, or negative electricity, we should conclude that its effect is not confined to the leaf, but must be communicated to all parts of the trunk of the tree, on account of the conducting power of the wood, and convert the dissolved humus into woody fibre. Nature appears to have designed the leaves for the special purpose of the elaboration of the sap; but, instead of conveying it to them and again transmitting it, in its altered state, to the various parts of the tree, she has adopted a more simple and effectual method for accomplishing the same purpose. The evaporation from the leaves gives rise to the excitement of negative electricity; and this, through the conducting medium of the fibres, or the moisture they contain, tends to consolidate the sap, causing, perhaps, at the same time, a slight deoxidation. In spring, when the leaves are absent, and evaporation is almost suspended, the juice of the maple affords sugar. In April, when evaporation begins to take place, to some extent, from the newly formed leaves, the gradual conversion of sugar into woody fibre is marked by the viscosity of the syrup. During the summer, when great evaporation takes place from the leaves, there is a continual formation of woody fibre. In the end of autumn the formation ceases, and the presence of sugar can now be recognized in the sap. I shall now consider more minutely the manner in which these changes are effected, all of which can be traced to the influence of electricity.

"§39. It appears from a chemical analysis of starch, gum, sugar, and the cellular fibre of wood, that they are all composed of the same elements, united in nearly, or, perhaps, exactly the same pro-

portions. The atomic composition of each may be represented by the formula C. 12, O. 10, H. 10; and woody fibre differs little from them in composition, containing less oxygen and hydrogen. Several facts show that these substances are mutually convertible into each other; and sawdust has been actually converted into starch by either of the following methods: 1st, By being heated several times in a baker's oven; 2d, By the action of strong sulphuric acid; 3d, By the action of hydrate of potash. In the first method, the change of the sawdust seems due to the absorption of vapor from the air, on account of its capillary attraction. In the second case, the conversion is attended with no decomposition of the sulphuric acid, and is caused by the absorption of moisture from the atmosphere, by the condensation experienced in its union with water, and by its electrical state, to which I will shortly refer. In the third, the change may be traced to the condensation of vapor, and, perhaps, of carbonic acid, which potash absorbs from the air. It may be observed, also, that starch or sawdust may be converted into sugar by the action of sulphuric acid; and the change appears to depend on the same principle of condensation—or positive electricity. Potash and lime appear to act in like manner, in the purification of sugar, as it has been shown by M. Pelouze, that the carbonic acid which the lime absorbs, is principally derived from the atmosphere. On the contrary, the deterioration which sugar suffers when the evaporation of the syrup is conducted at a low temperature, or in the open air, seems owing to its partial conversion into starch, or woody fibre; and a change of the same nature is apparent when the extractive matter of vegetables is rendered insoluble under similar circumstances.

"§ 40. Sugar, vegetable extract, starch, gum and woody fibre, may be regarded as the same vegetable matter, in different states of electricity, and, therefore, in different degrees of solubility. The production of sugar is owing to the influence of positive electricity, and its solubility and tendency to decomposition, seems due to the same cause. The formation of woody fibre, its insolubility and tendency to resist decomposition, must be ascribed to negative electricity, which, in the vegetable kingdom, proceeds from evaporation. When this takes place from the leaves, the substances dissolved in the sap must gradually pass into woody fibre. In the spring, before this change takes place, a portion of sap in the upper part of the tree, must ascend to the branches. From want of elaboration, it is highly charged with saccharine and extractive matter, and is expended in the production of flowers and blossoms, which, on this account, continually emit carbonic acid. Blossoms are sometimes observed to return in autumn, from the partial suspension of evaporation, but in a small number, the supply of sap being exhausted during the summer. Flowers, indeed, occur at other times on many small plants, on which the action of the leaves is not adequate to the complete elaboration of the sap during the short time it takes to ascend; and the same cause might give rise to the imperfect form-

ation of woody fibre in weeds and smaller plants, and to their strength and durability."

"§ 46. As the elaboration of the sap is chiefly dependent on evaporation and light, the length of the day is very favorable to the production of woody fibre, while the length of the night, at a suitable temperature, must promote saccharine formation. In high latitudes, the days in summer being much longer than the nights, the formation of woody fibre takes place with great rapidity and great perfection. Tropical climates, where the days and nights are nearly equal, are not so suitable for the production of woody fibre, but afford sugar in a greater abundance. In low latitudes, sugar, starch, &c., appear to be formed in a greater quantity when the days and nights are nearly the same length; and in high latitudes the ripening of fruits, about this time, may be accelerated. The diminished solidity of the leaves, from the same cause, is from the waste of carbon, which is converted into carbonic acid, and cause them to fall from the tree at this time. A minute examination of the ripening of seeds, their germination, and the mode in which they produce plants of the same species as from which they grew, shall be deferred till my next essay.

"§ 47. An imperfect elaboration of the sap (as should be inferred from the principles I have explained), may proceed from a want of sufficient evaporation, from an undue condensation of vapor, from the excess of positive electricity in the atmosphere. Such a state of elaboration should necessarily impart to the various products of vegetation, a tendency to undergo decomposition. Indeed, little doubt, that the potato rot, which has extended over various parts of Europe, and has visited some parts of this country, may result from the electrical state of the atmosphere, or from some other sources of electricity. No wonder that the application of lime, potash, salt, &c., were ineffectual, and, perhaps, served to accelerate the decay. When evaporation is caused to a great extent, the formation of woody fibre takes place in a greater quantity, and the products of vegetation have a greater tendency to undergo decomposition, a less nutritive power, and a less disposition to germinate. In the last case, the application of lime may be productive of some benefit; while in the former case it is evidently injurious. The fact that the diseased potatoes (according to the analysis) contained an unusual quantity of sugar—that they had a great tendency to germinate, and that drying them by direct exposure to the sun's rays, was the best preventive, seems to accord with the present theory. Indeed, I have no doubt that most diseases of plants can be traced to the undue influence of either positive or negative electricity, which act such an important part in the vegetable world."

In connection with these views it is interesting to remark that ANDREW JACKSON DAVIS, the celebrated clairvoyant, of New York, in an essay published in the *Univ. of October*, 1848, traces the potato rot to electrical influences, and prescribes, as a remedy,

application of iron-filings, or ferruginous materials from a blacksmith shop, to be spread upon the earth, near the plants, for the withdrawal of the superabundant electricity.

The following passages, at the conclusion of Mr. Vaughan's pamphlet, imply that he will give us, hereafter, a much more extended development and application of his views:

"It is not a little surprising that modern philosophers, who have paid so much attention to the decomposing agency of electricity, and who have observed so diligently the electrical changes in the atmosphere, should have neglected to examine the chemical decomposition which must necessarily result from them.

"The variations observed in the electrical state of the atmosphere, by night and by day, during rain and in cloudy weather, at high and low places, all accord with the theory contained in the preceding pages, in regard to the excitement of negative electricity by evaporation, and the decomposition of carbonic acid. Indeed, so far as I can learn, there are no phenomena in the vegetable kingdom which cannot be traced to the influence of that universal chemical solvent, electricity. In another essay, I shall trace to this principle, the beneficial effects of organic and inorganic manures, the injurious effects of several substances to plants, the production and ripening of fruit, the germination and growth of seeds, &c.

"The foregoing is a brief outline of the system of vegetable physiology, which I offer to the consideration of the public. I have omitted many proofs which might be advanced, to show that it is well founded; and I have left unnoticed several phenomena which it might account for in a satisfactory manner. I did not intend, in this little work, to render it free from all objections to which a new theory must be subject, nor to answer all the arguments which may be urged against it. My object was, to call the attention of scientific and practical farmers to an examination of its principles, convinced that, by their researches, it may be fully confirmed; that it may be freed from the errors which have escaped my notice, and that it might be rendered productive of much utility in the practice of agriculture."

From the originality and importance of his views, and the shrewdness of his criticisms upon Liebig and other writers, we may justly anticipate much instruction from the future labors of Mr. Vaughan. Had the doctrines and experiments of his pamphlet, been brought forth by any of the celebrated authors of Europe, they would have produced a profound sensation in the scientific circles of the old world. I cannot yet affirm that the demonstration of his views is complete in all the details, but it does appear that the essential points of his doctrine have a firm experimental basis.

In a future number I shall elucidate their applications to the human constitution

ART. IV.—CHOLERA; ITS CAUSES AND CURE

BY A. J. DAVIS.

ON Saturday night, the 16th of October, I awoke from a and natural sleep, with the impression, deep and strong upon mind, that I must write an article concerning pestilential or cholera. The impression was truthful and authentic, and I finally resolved to investigate the whole subject on the subsequent morning. Immediately after breakfast, I proceeded to the investigation. I desired to ascertain the origin and history of cholera, its causes, character, symptoms and cure. In order to obtain highly important information, I retired from surrounding object influences, and elevated my mind to a higher and more perfect and while thus situated, I scanned the whole ground occupied by the disease heretofore and at present.

This interior mode of obtaining knowledge, independent of all popular education, is but little understood, even by those who have most reflected upon and read, concerning its novel and various manifestations. The power to investigate the pathological condition of one or every individual under treatment at the *Hôtel Dieu*, in Paris, or to grasp, within the brief period of ten minutes, all the information necessary, concerning the number of cases of cholera in the hospital at St. Petersburg or at Berlin, or in Russia, is certainly a new and astounding phenomenon. The mode by which this knowledge is obtained, and by which the phenomena are developed, require an illustration according to their actual occurrences. I will explain.

Previous to commencing the investigation on Sunday morning, I committed to my stomach a less than usual quantity of food—abstemiousness being necessary to an easy passage to the superior condition. About twenty minutes after breakfast, I retired to myself at my writing table, and became wholly absorbed in the desire to acquire the information. Soon my mind became independent of every other portion of my being; it absorbed the mental essence, or the sensation pervading the organism, the self, and my body was quite insensible to external object influences and disturbances, all of which I avoid, so far as possible, previous to inducing that spiritual composure, which necessarily precedes the superior condition. Divested thus of that sensibility which intimately connects mind with the physical organism, that with surrounding substances, I was living no longer in the body, but in the spirit. Now a soft, clear, mellow, penetrating

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emanated from my head in every direction, and almost immediately concentrated at about six feet before me, on a plane horizontal with that region designated, by phrenological writers, as being the location of the faculties or organs of perception. And here I will state, for the first time, that atmospherical *electricity* is a *medium* of sight to the spiritual eyes, on the same principle, and by the same laws, as is atmospherical *light* a *medium* of sight to the natural eyes. And the silvery light which proceeded from my mind, pleasingly blended with the atmospherical electricity which pervades immensity; and this passed *to* and *through* each and all objects and substances, occupying the space between my house, in Williamsburgh, and the hospital, in St. Petersburg, in Russia.

I have said, that the lower contains the higher, undeveloped, and that the higher comprehends and pervades the lower; so with electricity. It is generated by chemical action and decomposition in the most interior departments of the earth, and, when developed, it permeates and penetrates, unobstructed, the most compact material substance or organization in being. Therefore, no mountain, or other obstacle, could prevent the passage of the electric medium which was the vehicle of my spiritual perception; nor could any thing resist its instantaneous penetration and permeation, or retard its rapid progress toward the scene of my desired investigations, which, be it remembered, was located where existed the causes and developments of epidemic cholera. Though wonderful, it is nevertheless true, that the electric fluid shot, in a straight line, through the great mass of matter which lies between the eastern and western hemispheres of our earth, owing to its spherical form or rotundity. And within the brief period of twenty seconds, from the moment my intellectual perceptions were opened and enlarged, I was in close sympathy (even to the disappearance of distance itself) with those localities where exist partial or complete symptoms of the disease under consideration. I saw the various modifications of the original type of Asiatic or epidemic cholera, represented in nineteen undoubted cases in all of Russia, eleven of which were in the hospital at St. Petersburg. Seven of the number at the hospital were convalescent, or nearly so, and the remaining four were either dead or dying. I saw that the pestilential character and tendency of the disorder had abated in violence, in almost all parts of Russia, and that (excepting in Berlin) there were no substantial indications of the advancement of the disease any further west on the continent of Europe. I saw that, in the whole of Russia, since the latter part of the month of October, 1846, there had occurred, including all the forms and phases in which the disease is capable of developing and manifesting itself, two hundred and ninety thousand and twenty-seven cases, and one hundred and sixty-six thousand six hundred and seventy deaths—showing a defective and inadequate mode of medical treatment.

After making all necessary observations concerning the history of the disease, and satisfying myself as to the means prescribed by

nature for its prevention or effectual cure, the electric light, or rather my spiritual perceptions, returned to and retired within me. And as the mellow light re-entered my mind, and, through it, my organization, the latter was restored to its ordinary condition of life and sensation. I arose from my chair, twenty minutes after passing into the superior condition, with the whole scene daguerreotyped upon my memory. I continued thoughtful and abstracted until about four o'clock in the afternoon of the same day, when my brain was relieved of its congested and over-burdened state, by a copious bleeding at the nose. Thus I obtained all the information requisite to the construction of the following article; and in this way do I always perceive, and receive, whatever I feel moved to seek. I will now proceed with what I was then, and am now, impressed to say, concerning this most formidable enemy to individual life and health, and to public safety.

1. ITS HISTORY. The disease under consideration is called *Asiatic cholera*, because, in the year 1817, it originated in Jessore, which is in that portion of Asia known as Hindoostan. Its first form and manifestation of symptoms, were representative of a sudden and severe bilious colic, which rapidly increased in quickness and intensity, until it ultimated all the concomitants of the more familiarly known epidemic cholera. It continued to afflict the inhabitants of Jessore, and contiguous towns and cities, more or less, according to the revolutions of the seasons and variations of the temperature of the atmosphere, for about ten years, when it proceeded westward; and, in the year 1828, it was developed in many portions of Russia. The disease was new to medical practitioners, and, notwithstanding their individual and combined exertions, it marched onward and westward, and at length appeared in England. This was about three years subsequent to its first appearance in Russia. This caused its first appearance in England to be chronicled in 1831; but I can safely affirm, that the undoubted precursors of the Asiatic pestilence were manifested ten months previously, in the form of general tendencies to influenza, intermittent fever, bilious and hepatic disorders, and flatulent dysentery. In England, the disease seemed to encounter but few, if any, obstacles to its advancement westward. True, medical science rallied all its available forces to the combat, but though at first it was partially effective, at length it seemed only to subserve the progress of the enemy, by weakening, with experimental and debilitating treatment, a line of individual constitutions, which, with a succession of adequately predisposing causes and complaints, opened a path through Montreal and Quebec, for its passage into America. This was in the year 1832. It prevailed in Europe and America during the summer and autumnal months.

2. ITS CAUSES. In the chapter on Consumption, I have said, "To understand the cause and nature of disease, some universal and unequivocal standard must be ascertained, whereby to measure and represent that just condition of body and mind, termed health.

It will be universally conceded, I think, that the *true standard* and representative of health is HARMONY—that *all else* is disease and discord. * * * There are three general causes of disease: 1. Hereditary or constitutional predisposition. 2. Accidents of life, or repeated changes in the organic or mental temperature. 3. Voluntary or unexpected exposure to disturbing social circumstances, and atmospherical vicissitudes." My object in re-stating the foundation-causes of all human constitutional disturbances, is to impressively define, in the mind of the reader, what constitutes the parent cause of the disease in question.

Those who have in their possession, thorough, or even but partial, information concerning the diseases of India, fully comprehend what influence predisposition, occupation, food and climate, in a state of partial or complete combination, have upon the development of organic and functional disturbances. The diseases of India are almost entirely produced by the three general atmospherical conditions, which are the distinguishing characteristics of the whole peninsula, viz.: a hot season, a rainy season and a cold season. Those complaints which are not *produced* by these conditions, are *developed* by them, especially among persons belonging to the army and navy. Natives of India, and those who were born amid surrounding mediums and conditions indigenous thereto, and who are, consequently, acclimated, are seldom the subjects of those diseases to which the European army is ever exposed. And there is a manifest difference in the susceptibility of individuals of different nations, who join the European regiments, and sojourn in India; for statistical statements and pathological and clinical observations, arranged and communicated by appointed physicians and surgeons of the army and hospitals, prove that the young are more frequently the victims of eastern disorders, than those that have passed the age of twenty-five, and that the Irish soldier is more susceptible than the Scotch, and the latter more than the English.

The diseases of India—those that are induced principally by diet and climate—are hepatitis, or inflammation of the liver, abdominal inflammation, dysentery, paroxysmal, intermittent and remittent fevers, encephalitis, or inflammation of the brain, rheumatism, syphilis, indigestion and cholera. The primary or developing causes of these respective complaints, are to be found in the elements constituting the atmosphere, the equilibrium and temperature of which are quite frequently disturbed. The hepatic, or liver complaints, prevail during the hot season; the fevers and paroxysmal symptoms, together with encephalitis, indigestion and rheumatism, during the rainy season; and the dysentery, and other abdominal disturbances, and their ultimate form, which is *cholera*, during the cold season! Remember, I have said that the primary or *developing* causes of these complaints, are to be found in the elements constituting the atmosphere of India. I do not mean by this, that liver disease is confined entirely to the hot season, fevers to the rainy, and cholera to the cold, for clinical observations and statistical state-

ments, made by the presiding regimental surgeon at the hot stations, such as the Madras, Bellary, Trichinopoly, Nagpoor, and other stations near the alluvial plains and marshy shores of the Bay of Bengal, prove that the hot stations are the healthiest generally. But I mean, that the sudden changes in the temperature of the atmosphere, are uniformly followed with the development of new symptoms of diseases—generally arranging themselves in the order and form of those various complaints already mentioned.

It will be seen by this, that there are three specific conditions into which the elements and substances of the enveloping atmosphere resolve themselves, and that each resolution is attended with corresponding changes in the human organization. And this leads to a plain solution of the causes of cholera, or to a knowledge of those influences which are intimately engaged in its development, in individuals having local weaknesses and a constitutional predisposition. The cause of the epidemic cholera is bosomed in the constituents of the atmosphere. I will state the reasons.

It is not known to scientific men, but it is nevertheless true, that there are two sources of atmospherical electricity: one is the great mineral laboratory in the earth in which we live; the other is the great, stupendous material universe. The former is the inferior and lowest source, the latter is the superior and highest source. The mineral substances in the earth generate the grossest form of electricity, which ascends through the vegetable and animal organizations that exist upon the earth, into the lower strata of the atmosphere. But the material universe—I mean all the innumerable systems of suns and planets that inhabit immensity—all *these together* generate the most perfect forms of electricity, which descends through all things, and constitutes the upper strata of the atmosphere; for, be it understood, that the enveloping atmosphere of our earth, as well as of all other earths, has successive stratifications, corresponding to the coatings of an onion, or to the geological formations of our globe. The electricity of the earth is local, but the electricity of immensity is universal.

Chemical action in the earth is incessant, and, notwithstanding the perpetually progressive refinement and ascension of its electrical productions, there is a kind of *gross* electrical element locally evolved in various portions of the earth. This local, or chemical, electricity is seldom in a state of equilibrium. I must defer the particular explanation of the causes of this, to some future article, but will now state two reasons, as a basis upon which to rest the mind: First, the irregular deposition and dissimilar arrangement of mineral particles, or substances, in the earth; second, the unequal exposure of the earth's surface to the sun. The frequent and sudden destruction of the electrical equilibrium of the atmosphere, is constantly throwing the human system, as well as all other systems, into three electrical conditions, viz.: a negative state, a transition state, and a positive state.

Here, I perceive, it is necessary to remark, that *magnetism* is only

a higher form of electricity. I depend, for demonstrations, but little upon what has been fragmentarily ascertained through chemical experiments. I refer to them, never for the purpose of supporting any hypothetical theories, nor to establish favorite conclusions (for I have *neither* of such to illustrate or defend), but I refer the reader to them simply as lights, to guide his mind into the *truth* asserted. I would, therefore, say, that whatever light has been developed by the experiments of Galvani, or Volta, or Sir Humphrey Davy, or by Franklin, or by Zutter's or Liebig's more recent discoveries in galvanic and voltaic electricity, independently illustrates the above assertion, that magnetism is a higher and gentler form of the electric medium.

Although chemical action is constant in mineral combinations, electricity is not constantly given to the atmosphere, owing to attractive and retaining substances in the earth. In such cases, the gross portion of the electrical element in the atmosphere, becomes refined, and the temperature is essentially changed. Now, the *hot* season in India or America, and in every portion of the eastern and western hemispheres, is entirely owing to a *positive*, or *magnetic*, state of the atmosphere; the *rainy* season to a *transition*, or *indefinite*, state; and the *cold* season to a *negative*, or *electrical*, state.

But the human organization is so admirably constituted, that its resisting power is ever equal, if not superior, to the action of external elements and physical circumstances—such as the air we breathe, the food we eat, the exercise we are compelled to take, and the situation in which we may be placed with reference to water and material creations. A prolonged existence of any one condition, however, will overcome the constitutional power of resistance, and result in a corresponding destruction of physical and organic equilibrium. Therefore, the *hot* seasons, or where and when the atmosphere is positive, the inward source of heat in the human system is developed. The liver is called upon to excrete more carbon, the lungs to do with less oxygen, and the stomach to do much of that labor which other organs were designed to perform. Hence proceed indigestion, dysentery, abdominal inflammations, hepatitis and pulmonary prostration. Hence proceed the paroxysmal fevers of India, the bilious, yellow and typhoid fevers of the South, and the various fevers to which the system is subject or predisposed. Therefore, too, in *rainy* or indefinite seasons—when the system is approaching, or has arrived at, a transition state, when the nerves and muscles and vital forces are weak and languid—there are developed the milder, or chronic, forms of disease, viz.: general prostration, hæmorrhage, pulmonary diseases, rheumatism, deafness, paralysis, pains in the back and head, and all those numerous symptoms and diseases, which are but modifications of one, and *only one*, disease, viz.: a want of physical harmony, or a loss of equilibrium in the atomic motions and organic temperature of the body. And in cold seasons, especially in a certain kind of cold or electrical atmosphere, when the developed heat of the system is driven back

rapidly upon the vitals, and when the whole internal viscera become loaded and congested with heat and blood and undistributed matter, then the inward action is exaggerated, the system is convulsed, the organs are collapsed, the membranes become inflamed, and then are developed the simple, compound and fatal cholera. Cholera is a simple disease; but of this I will speak in the section on symptoms.

In reviewing the general causes of the Asiatic pestilence, we gain explanations concerning the phenomenon of the POTATO ROT; and also why the magnetic telegraph refuses, at times, to transmit impressions from one station to another, through the atmosphere. All that has been hypothetically advanced by scientific agriculturists and chemists, is far from furnishing a solution of the problem of the sudden decay of the potato plant. Indeed, they have signally failed in their attempts to ascertain the hidden causes, which are, in fact, neither foreign nor difficult to comprehend. They are these: the inferior portion of the electric fluid, which is in the lower stratum of the atmosphere (especially when the *negative* state is existing), permeates everything upon the surface of the earth, and, more particularly and thoroughly, those localities where it is in a greater and stronger state of concentration. And the result of this permeation or saturation of the electric fluid, is a quicker and unnatural motion among the particles of the organized substance. This quicker motion generates heat, this fever, and this produces decomposition. Hence the potato decays rapidly. In fact, *the atmosphere has had the cholera*, more or less, for thirty years (and will continue to have it until there occurs a geological change in many portions of the earth), and from the atmosphere, the disease has been, and is, communicated epidemically to the predisposed potato plant, and also to the human system.

It may be well here to remark, that potatoes do not *rot* where exist substances qualified to absorb the abounding electricity, nor where the equilibrium of the soil is not partially or wholly destroyed; nor is man afflicted with the disease when the gross element is dissipated or consumed by surrounding mediums and organizations, whose power of resistance is stronger, in that particular, than his; but where and when the equilibrium of the soil is lost, and no organizations exist to defend the human system, then the potato, and also man, has the Asiatic pestilence. And when occurs this local disturbance in the electrical equilibrium of the atmosphere, the magnetic telegraph will manifest *one* symptom in the sudden cessation of its work, in transferring impressions; because the electrical medium is then *too* gross, and the conditions of the atmosphere *too* negative, to convey impressions which are even in accordance with positive influence.

I desire to point the reader to a few external evidences of the choleraic condition of the atmosphere, which will be found to arrange themselves in the order of, and on a plane parallel with, those precursors of the epidemic in 1832.

1. The less than ordinary quantity of rain. 2. The frequent changes in the temperature of the atmosphere. 3. The peculiar coldness of the summers, and the unfrequency of lightning and thunder storms. 4. The tendency to influenza and colds. 5. The resolution of colds and bilious disturbances into dysentery. 6. The appearance of the cholera in Russia, and its gradual advancement westward.

I come now to a particular consideration of the more immediate causes of the disease. From what has been said, it will be seen that a gross form of the electrical fluid, locally generated, and concentrated in particular places, is the general cause of *cholera* in the atmosphere, in the potato and in the human system. But, confining our attention to the latter entirely, it becomes necessary to say, that the oxygen and nitrogen, which constitute the inhaling medium, contain electricity in disproportionate quantities. Oxygen contains more than any other gas, and this is drawn into the system through the lungs, and, consequently, a large quantity of the unhealthy element also. Thus the body, like other substances and organizations, becomes saturated with it: and this generates a quicker motion among its particles, this heat, and this cholera. It cannot be denied, that uncleanness and unwholesome nourishment, and predisposition on the part of the individual, occupy an important position in the list of developing causes; but they are as nothing compared to that cold, electrical and negative state of the atmosphere I have described. The immediate and last cause of the fatality in cholera, is a complete paralysis of the pneumogastric nerves—a class of muscular nerves which influence and actuate the functional operations of the lungs and stomach.

3. ITS SYMPTOMS. The symptoms of cholera (which signifies *flow of bile*) are very numerous and diverse. They are diverse, because the disease is simple, compound, and different in different individuals. And there are various forms of the disorder, viz.:

SPONTANEOUS CHOLERA. This is a simple form of bilious colic, produced by no visible cause, except indigestion and slight cold, in consequence of a change in the temperature of the body. It is attended with violent griping, copious vomiting, and cathartic discharges of bilious matter; this is followed by spasmodic actions in the muscles of the stomach, abdomen and lower extremities; and soon ultimates in general prostration, or death, or convalescence.

CHOLERA INFANTUM. This is attended with severe flatulency, bilious griping and watery diarrhœa. Great heat and thirst, and rapid and painful vomiting succeed; the pulse is irregular and bounding. It terminates in drowsiness, convulsions, prostration, death, or health, in a period not exceeding one month.

SPASMODIC CHOLERA. This is ushered in with intense heat, internal convulsions, cramps in the lower extremities, which rapidly succeed each other, and advance, with regular steps, into the side, fingers, arms, shoulders, &c., and terminates in chilliness, coma, death, or health, in the brief period of six days.

ASIATIC CHOLERA. Called, also, by different medical writers, *malignant cholera*, *pestilential cholera*, *blue cholera* and *epidemic cholera*. This is the fully developed disease. It is sudden in its attack, and is attended with general depression. The patient appears unspeakably distressed. The countenance puts on a leaden, death-like appearance, a crimsoned circle is visible around the eyes, which are sunken and inexpressive. The pulse is high, then feeble, then intermittent, fluttering, wirey, and then is lost to the examining finger. The skin is cold, giving the sensations of the coldness and moisture characteristic of the state of death. In the milder forms, vomiting and diarrhœa begin earlier than in attacks of the cholera in this form. These, however, come on in a few hours, and generally result in overpowering the organic functions in a few hours more, which, inducing a quiet state, carries the patient beyond the sphere of disease.

It is quite unnecessary to dwell upon the symptoms of Asiatic cholera. The principal idea to impress upon the reader is, that all the foregoing indications are embraced in the highest and last form of the complaint, together with almost every symptom that characterizes typhoid or ship fever, and fever and ague—such as tremulousness or shivering, incontinence of urine, or copious discharges and coldness. In truth, *cholera is only, and simply, the opposite of a violent fever*. Fever is the positive state, and cold, or cholera, is the negative state. The former is caused by a superabundance of magnetism in the atmosphere; the latter, by a superabundance of electricity. Magnetism is hot, and electricity is cold. The patient will feel cold to the touch, but is constantly complaining of the intensest heat, and positively rejects the administration of warm applications.

4. THE CURE. Unfortunately, medical science could do but little to prevent the spread of this disease. The treatment generally instituted was unsuccessful every where, and in almost all cases: indeed, it was better calculated to produce, than to cure, the disease against which it was employed. Bleeding, blistering, leeching, calomelizing, and debilitating the system by various allopathic remedies and proceedings, did but little besides frightening the patient and hastening the period of dissolution. It would seem, however, that the simplicity of the disease was sufficient to suggest simplicity of treatment, and such I am now delighted in being able to prescribe. From what has been said, it must appear evident to the reader, that the complaint is not a mysterious or compound one, and that a simple treatment—one calculated to restore to the system its just equilibrium of atomic motion and temperature—is needed to cure the patient and extirpate the general pestilence.

But, before prescribing for the disease in man, I will say what is good to preserve the potato from decay. About the time the tops begin to be visible above the ground, put a pint of iron-filings, or cinders, or scales, found around the blacksmith's anvil, upon the place where the potato was planted and is growing. This will ab-

sorb the superabundant electricity, and restore a balanced condition among the surrounding elements, which are engaged in decomposing the plant, and the decay will cease immediately.

As for the individual suffering with an attack of cholera, I am impressed to prescribe the following, which I now admonish every individual to immediately procure : Get two gallons of the best cider brandy ; put it into a stone vessel ; add to the brandy half an ounce each of carbonate of iron, gum of camphor, gum of kino, and African capsicum. Shake it once or twice during ten days, and place it where it can be easily obtained. Now take a walk into the fields, and find eight smooth, equal sized stones, not exceeding, in size, a six pound cannon ball. Now, if you have no wash-tub sufficiently spacious for a man of your size to sit on a chair in, then I advise you to procure one immediately. Have the jug of *brandy*, the eight *stones* and the *tub*, at all times on hand and available, and you can not only defy the severest form of Asiatic cholera, but you can dispense with the services of the physician. When the patient is attacked with any of the detailed symptoms, place him directly in the tub, divested of clothing, and put about him, secured around the bottom of the vessel, two or three heavy blankets (leaving an aperture to put the hand in), then, having the stones made hot by placing them in the fire, put *four* in the tub, under the chair on which the patient is sitting, and pour on brandy from a pitcher, or some convenient vessel. Let the liquid fall with sufficient moderation on the stones to enable the fumigations to pervade the patient's body. Change the stones as they become cool, or incapable of converting the liquid into steam. This direction being constantly followed, the patient's suffering will soon cease. The griping and convulsions, and, indeed, all the symptoms, will disappear in part or altogether. As soon as the perspiration is visible, give the patient a gill of white brandy, and place him in bed. Thereafter, the most ordinary nursing will restore the sufferer to a state of physical health and harmony. I would again urge the necessity of procuring the above articles, and of keeping the system in a state of cleanliness, and the mind in a state of freedom and happiness.

In confirmation of the foregoing, the editor of the *Univercælum* says : "Of the philosophy of that portion of Mr. Davis's article on cholera, which speaks of the *ROTATO ROT*, and the means of preventing it, we have received the following confirmation from an otherwise intelligent gentleman, who is no believer in interior perception. He informed me that a friend of his, residing in the interior of this state, had been in the habit, for two or three years past, of treating his potato vines with the sweepings from a *blacksmith's shop*, and that it was found that wherever these were spread upon the ground, the potatoes were not subject to the rot, whereas the rot frequently prevailed in those hills immediately contiguous. This effect, he said, was generally attributed, by those who observed it, to the *ammonia* exhaling from the horny substances chipped from the horses' hoofs ; but he said he was convinced that it was rather attributable to the *iron filings* and *oxydized scales* scraped up from the floor of the blacksmith's shop. This is precisely Mr. Davis's remedy."

ART. V.—INTUITIVE SCIENCE—CHOLERA AND POTATO ROT.

NEUROLOGY recognizes, in man, a higher species of intellect than is generally recognized by modern philosophy. It teaches that certain interior intellectual organs of the front lobe, lying in the region to which Gall gave the name of "EDUCABILITY," manifest that transcendent form of perception, which reaches, at once, the most elaborate results of reason and judgment. From this intuitive region proceed the phenomena of *clairvoyance*, or mental perception of distant objects, and *prevoyance*, or mental perception of future events. This region of the human brain has heretofore been neglected, alike by the physiologist, phrenologist and mental philosopher. But the cultivators of animal magnetism have known and exercised these powers, and gifted men, in various ages and different nations, have spontaneously displayed their own high endowments. Yet the man of genius, the wise seers and the magnetists alike, have all overlooked the true nature and location of these wonderful powers; it has remained for neurological experiment to demonstrate, that the internal portion of the front lobes of the brain (adjacent to the falx), is the seat of all manifestations of the intuitive intellect, and that these extraordinary faculties belong not merely to the gifted seer or the mesmeric subject, but really to the whole human race, and need only a proper cultivation, hereafter, to elevate the whole human family into the sphere of science and virtue.

There will be a new era in the cultivation and diffusion of science, when the intuitive intellect begins to be cultivated—when men of science learn to *penetrate the mysteries of nature by direct perception*. That such a period must come, and that it will be an era of incomparable brilliancy, is already foreshadowed. We find that a poor ignorant youth, at Poughkeepsie, a simple-hearted shoemaker, ANDREW JACKSON DAVIS, after undergoing repeated mesmeric operations, and displaying the most astonishing clairvoyant powers in the mesmeric somnambulism, during a few years past, has so effectually developed and invigorated his intuitive or clairvoyant faculties, as to be enabled to exercise them without the assistance of any magnetic operator, and thus, at will, to elevate himself into a state of spiritual clear-sightedness, in which his clairvoyant perception is equal to anything displayed in the state of artificial somnambulism. During the course of experiments in which his magnetic somnolence was displayed, his intellectual powers became so vigorous, and his discourses were so interesting and beautiful, that it was deemed proper to take down his words as they were delivered, and to publish the series of discourses which he uttered in the somnolent state.

These discourses, published in a large volume of eight hundred pages, and commonly called the "Revelations of Davis," cover a great range of theological, moral, spiritual and scientific subjects, and display an amount of knowledge and intellectual power perfectly astounding, to those who are not aware of the vast scope of the intuitive faculties of man. This work (which I have not yet examined) stands as one of the most extraordinary psychological phenomena ever known. That a comparatively uneducated youth should have produced, in magnetic slumber, by extemporaneous discourses, a brilliant and learned work, as this is generally conceded to be, which few educated men, with libraries at their command, could surpass with the pen—is a fact so astonishing, that nothing but the most unanimous and unimpeachable testimony could have established its truth. Yet this is a conceded fact.

Since the production of that work, Mr. Davis has, without undergoing the magnetic operations, written a number of essays, principally upon medical subjects. One of these essays, relating to cholera, was published a few months since in the *Univercœlum*, a weekly newspaper, at New York, to which he is a frequent contributor. This essay of Mr. Davis is herewith presented to the readers of the *Journal of Man*, as an interesting display of intuitive intelligence.

The style of Mr. Davis's essays upon medical subjects, is such as we might expect from the nature of the subject and the method of research employed by the writer. They abound in vague generalities, truisms and abstractions, while they are deficient in that minute, full and positive accuracy of statement which belongs to essays based upon experience, or upon exact scientific knowledge. There is a shadowy dimness about the whole, which indicates its origin in the ideal class of faculties. But in his plans of treatment, he generally presents a distinct, simple and rational course—different materially from the fashionable system of practice—yet coinciding, in the main, with the principles and methods approved by a great number of medical men who dissent from the common course of medical practice. To what extent Mr. Davis's views may be strictly original, and to what extent they have been influenced by information derived from others, I cannot say; but I think it highly probable that in his clairvoyant communications and sympathies, he is impressed and guided, to some extent, by the sphere of medical knowledge existing in our country, with which he comes into mental contact, perhaps unconsciously.

We do not find him making any important *revelations* or *discoveries* upon medical subjects. On the contrary, he merely presents, in a peculiar manner, what was before known to a portion, if not to the whole, of the medical profession. He exercises his judgment in laying down a peculiar course of management, but he proceeds upon principles which are obvious and from which others may draw similar conclusions.

As to his views of the origin or cause of cholera, I have no doubt

that they are correct, so far as relates to ascribing this disease to *imponderable agents*. The movements of imponderable agents, which we may class under the generic title of **ELECTRICITY**, are probably the most important causes of epidemic diseases. In reference to cholera, we find that it rages alike in summer and in winter, in dry and in moist locations, in a malarious atmosphere and in an atmosphere apparently pure. It has no regular line of march nor uniform distribution, as if caused by the winds; and although it is sometimes communicated by contagion, it cannot be wholly excluded by any quarantine or sanitary cordon. If we refer the disease to electrical causes, dependent upon meteorological changes and the electric forces which belong to the strata of the earth, we find its eccentric course at once explained. This explains, also, the fact announced by several geological observers, that calcareous formations, especially where the blue silurian limestone abounds, are more favorable than others to the prevalence of cholera, and that the cliff limestone, which contains a portion of *iron* in its composition, exerts a protective influence over its localities. We may suppose that the calcareous strata are either better calculated than others to produce a negative or, in some way, morbid state of the superincumbent atmosphere; or, we may suppose that the electric current from calcareous strata, carries with it a more depressing influence, and is better calculated to derange the abdominal organs. Calcareous strata may also contribute to the unhealthiness of particular localities, by a greater conducting power, permitting freer and more sudden changes of atmospheric electricity than silicious or aluminous elements in the soil would permit.

The researches of Baron Reichenbach go to show the important influence, upon man, of imponderable agents heretofore unobserved, and several medical writers have endeavored to demonstrate the important influence of atmospheric and terrestrial electricity upon human health. Recently, Sir James Murray has given the subject an extensive investigation, and has gone so far as to maintain, that houses may be so constructed as to protect the inhabitants completely from the local electrical currents, and thus shield them from the prevalent diseases of certain unhealthy localities. Indeed, he maintains that his views have stood the test of experiment, and that houses constructed according to his directions, have secured the health of their inmates in regions where, without such protection, they must inevitably have suffered from the endemic diseases. In the future development of this subject, I propose to show, that not only the electric currents, of which Sir James Murray speaks, but the various strata of the earth, may have an important influence upon human health.*

* It is much to be regretted that there have not been more extensive meteorological and electric observations, to illustrate the philosophy of cholera. It is stated by Surgeon J. Smellie, of London, that "it has been remarked, that on those days on which this disease was most prevalent, the electric condition of the atmosphere was in a *highly disturbed state*, and the various instruments used to exhibit the phenomena of electrici-

The clairvoyant declaration of Mr. Davis, in reference to the state of the cholera in Europe, has not been contradicted by any subsequent intelligence from that country.

The method of treatment proposed by Mr. Davis, is entirely in accordance with the principles of medical science and the results of experience in America, Europe and Asia. Common sense indicates very plainly, that, as cholera is a disease of coldness and prostration, it must require vigorous stimulation and warmth, and that as the surface is cold, its vessels collapsed, and its circulation has receded to the interior, we should recall the circulation to the surface, by heat and stimulants—thus diminishing the internal congestion and equalizing the disordered circulation.

The treatment of cholera has been, in the greater number of cases, remarkably unsuccessful, but occasionally remarkably successful, presenting a wide contrast in the results of different methods of practice. So far as reports of cholera treatment have fallen under my observation, the greatest success has resulted from the stimulant plan. In Europe, where the general mortality was very great, remarkable success was claimed by homœopathic practitioners, and certainly the statistics of the results of their treatment are far more favorable than any which have been derived from allopathic hospitals on the continent. The homœopathic system presents the remarkable feature of using certain medicines in infinitesimal doses, as preventives, and there is a considerable amount of evidence in favor of the possibility of thus repelling the disease.

So far as I have observed reports and statistics of treatment, it appears that no allopathic practitioner has ever succeeded well in the treatment of this disease, who did not freely stimulate and restore the proper action of the skin. As a general rule, wherever a warm glow and free perspiration are produced, the danger is suspended or removed. Any system of treatment which will warm the surface, relax the spasms, check the evacuations and restore the suppressed functions of skin, kidneys and liver, *must be infallible*.

For these purposes, the treatment recommended by Davis will generally be sufficient, as it is recommended to those who are vigilant to meet the disease in time, and not for the unfortunate victim who is sinking rapidly by purging, vomiting, spasms and collapse. But, for the more formidable attacks of this disease, I would propose a plan and principles of treatment, which I venture to assure my readers, will *never fail* if promptly applied, unless the constitution has previously been greatly prostrated. The disease is now traversing our country, and both physicians and patients should stand prepared, with clear and positive views, to meet its first approaches with PROMPTNESS and ENERGY.

Let the patient immediately lie down, and preserve the horizontal position until all danger is over—until he is well. Cover him

ty, failed to be depended on, by reason of the paucity and irregularity of the electric distribution in surrounding nature: the magnet also exhibiting a reduction of seventy (!) per cent. of its usual power.”—(See *London Lancet*, Nov., 1848.)

with blankets and surround him with hot bodies, such as hot irons wrapped in flannel, hot bricks, or stones, or bottles of hot water: a large lump of unslacked lime, wrapped in a wet cloth, has been proposed as one of the means of generating heat, and would, doubtless, be very efficient and convenient. Bags of hot salt, or hot sand, are, in many respects, better adapted to such occasions than any thing else. If we can, conveniently, set on fire a cup or saucer of brandy, and allow the vapor rising from it to be retained around the person, this will be one of the most effectual methods of imparting heat; and if the spirits should be impregnated with capsicum, camphor, or other stimulants, as Mr. Davis recommends, so much the better. If, from the spasms or other causes, the foregoing measures should be hindered, we should adopt, at once, a still more efficient measure. Prepare a bath as hot as can be conveniently borne, and strongly impregnated with red pepper and salt, which can be done most expeditiously by pouring a large quantity of the tincture of capsicum into hot water. Immerse the patient in this, keeping his limbs, as well as body, immersed, and let him remain in the bath until the glow upon the surface and fullness of the superficial blood vessels demonstrates that the chill has been *entirely removed*, after which let him wrap in blankets and surround with hot bodies, as before.

Internally he needs stimulation and the arrest of the discharges. If he is vomiting, or upon the eve of doing so, give him an emetic of lobelia, ipecac, or salt and mustard. The former article is by far the best emetic in these cases, because it is powerfully antispasmodic and moderately stimulant. After the emetic, his stomach will generally be quiet, and you can administer medicine; but if nausea continues, peppermint or sweet spirits of nitre may be necessary to counteract it. Then *pour in the stimulants*. CAPSICUM and CAMPHOR are the two articles which have proved the most efficient and appropriate; but other stimulants will do, if these are not accessible. Ammonia, myrrh, ether and laudanum, have all proved serviceable; and the bayberry, which combines astringent with stimulant properties, has also proved very useful in America. Other astringents, as geranium maculatum (cranesbill), kino, catechu, or cinnamon, may be used with propriety. In violent cases, with cramps and spasms, lobelia or ether will give us all the antispasmodic power that could be desired.

While the action of the skin is roused by stimulants and heat, it will be important, also, to rouse the kidneys, which, in this disease, have suspended their function. Hence the success of a favorite prescription of Eclectic practitioners (rhubarb, peppermint and salæratum), which is so generally successful in bowel complaints and the milder forms of cholera. This combination acts upon the kidneys. As a diuretic, I would recommend, for various reasons, the spearmint, which may be combined, in the commencement of such cases, with carbonate of potash, or soda, as an anti-acid diuretic, to neutralize any morbid acid materials which may be present.

To reduce these general directions to the form of a prescription, I would say, commence by an emetic, if necessary, and drink freely of warm stimulating teas—as pepper and ginger—to promote its proper operation. Restore the heat by baths, or hot applications, aided (if need be) by friction upon the limbs. Take, every twenty minutes, a dose of the following preparation, or something similar:

Tincture of Capsicum,	℥j (one ounce).
Tincture of Camphor,	℥j
Tincture of Kino, or Catechu,	℥j
Tincture of Opium,	℥j (one drachm).
Aromatic Spirit of Ammonia,	℥j

Let the dose be from a tea-spoonful to a table-spoonful, according to the urgency of the case, and be taken in a hot aromatic tea of spearmint, ginger and cinnamon, to be drunk freely. (If spasms are present, lobelia or ether may be added.)

This course will inevitably arrest the purging, quiet the whole system and bring on a free, warm perspiration, in a very short time. After thus perspiring until the whole state of the constitution has been changed, and the disease effectually eradicated, it may be desirable, next day, to rouse the liver and bowels by a gentle evacuant, such as taraxacum, rhubarb, or aloes; but we must be very cautious, in the use of purgatives, not to expose ourselves to a return of the disease.

The foregoing prescription should be kept on hand by patients as well as practitioners, and used with boldness and confidence. I have tested its efficiency, and I also know that the most successful treatment, in Great Britain and America, has been upon a plan similar, in its principal features, to that which I have here laid down. It would be interesting to enlarge upon this subject, but the limited space forbids. I can only add, that instead of preparing for cholera by a regimen of unusual abstemiousness, which would be protective against febrile and inflammatory disorders, we should take the opposite course, and use a liberal supply of nourishing, stimulating food, to render the blood rich in its globulous and fibrinous elements. Bacon and beef should be prominent articles of diet, with good bread, potatoes, and other farinaceous food. Fresh vegetables, pastry, acid fruits and acid liquors, are objectionable, but *malt liquors* may be used with benefit. Brewers have generally escaped the cholera in America and in Great Britain.

The coincidence of Mr. Davis's essay with the results of medical experience, in reference to cholera; with Mr. Vaughan's chemical discoveries, in reference to potato rot; with Sir James Murray's researches, as to terrestrial electricity; and with my own neurological researches, is an interesting illustration of intuitive science.

The subject of the explanation of EPIDEMIC and ENDEMIC DISEASES, which has been merely glanced at, will be resumed as early as practicable.

THE RECEPTION OF THE JOURNAL by the press generally, has been courteous and friendly, and, in a few instances, liberally appreciative. Our newspapers, generally, take no deep interest in anthropological matters, and have given but little attention to the subject matters of this Journal; but, here and there, we see a philosophic spirit and a friendly interest in the advancement of anthropology. In several religious publications I have seen evidences of the right spirit. In the Ladies' Repository, of this city—an elegantly printed monthly, conducted, with ability, by the Rev. B. Tefft—a friendly notice of this Journal contains the following passage: "Now, had we the confidence and friendship of the Doctor, we would whisper in his ear, 'Let Dr. Rice, and all the other Doctors, entirely alone. Go on—do your work—do it silently, modestly, fearlessly; and let the public take care of Dr. Rice, as it does of yourself, and of all other men. You have undertaken, you think, a great work. If you have, and are successful in it, you will revolutionize more than one science before you die; and when you do die, your children, and the children of each and all, may go and scatter flowers upon your grave.'"

The worthy editor, however, whose friendly expressions I would reciprocate most cordially, is a little mistaken in his advice, as he does not fully appreciate my position. No one conceives more highly than myself, the serene and lofty position of the philosophic seeker of knowledge; yet no devotion to such pursuits, nor any success or reputation which might be thereby obtained, could elevate the individual too high to notice the arguments, the errors, the opinions, or the attacks of his fellow men. Such an indifference would be—not elevation, but haughtiness; not serenity, but egotism. I hold it to be my duty to notice the arguments and the delusions current among intelligent men, upon anthropological subjects, and in noticing their errors for refutation, I cannot regard such a proceeding as undignified; nor can I sympathize with the spirit of a religious paper of this city (the Advocate), which spoke of my reviewing Dr. Rice's productions as *blowing him up*. Such an expression betrays the partizan or pugilist, rather than the philosopher or christian. I controvert error because it is a duty to do so. I bear misrepresentation patiently, because "it needs must be" the fate of revolutionary innovators—and I correct errors or refute attacks, without a particle of unkind feeling for opponents, if I know myself.

The N. Y. HARBINGER, *oblivious* of the important principles and statements of the first number, and of the whole course of my public teachings, suggests: "We hope, however, that in future numbers, the Professor will give us the *science* of what he proposes to teach, and not mere scattered observations, with which discoverers are so apt to content themselves. Facts are only to be desired as they lead to some great and adequate generalization." Most excellent advice, though oddly misapplied. However, the shrewd editors of the Harbinger are no Rip Van Winkles, though rather somnolent (it must be confessed) on *anthropological* subjects. The Harbinger is a profound and brilliant newspaper, full of interesting matter.

THE SPHERES OF GOOD AND EVIL.

